

Figure 1a

	MS-GPC- 8-27-7	MS-GPC- 8-27-10	MS-GPC- 8-6-13	MS-GPC- 8-27-41	MS-GPC- 8-6-47	MS-GPC- 8-10-57	MS-GPC- 8-6-27	MS-GPC- 8	MS-GPC- 8-6
Plastic	-0.004	-0.020	-0.022	-0.025	-0.001	0.005	0.007	-0.022	-0.018
BSA	-0.003	-0.019	-0.021	-0.022	0.008	0.003	0.003	-0.016	-0.019
Testosterone -BSA	-0.005	-0.010	-0.012	-0.007	0.011	0.003	0.002	-0.009	-0.012
Lysozyme human	-0.005	-0.079	-0.079	-0.073	0.013	0.014	0.006	-0.081	-0.072
Apotransferrin	-0.009	-0.016	-0.018	-0.018	-0.005	-0.008	-0.004	-0.014	-0.016
MHCII (DRA*0101/ DRB1*0401)	1.549	1.493	1.467	1.525	1.400	1.256	1.297	1.058	1.306

Figure 1c

Target Proteins	scFv										IgG	
	17	2E	45	5C	73	8A	A1	B8	E6	FD	1D09C3	1C7277 305D3
DR4Dw4 Purified	+	+	+	+	+	+	+	+	+	+	+	+
Chimeric DR-IE purified	+	+	+	+	+	+	+	+	+	+	+	+
Lysozyme	- ^b	-	-	-	-	-	-	-	-	-	-	-
Transferrin	-	-	-	-	-	-	-	-	-	-	-	-
BSA	-	-	-	-	-	-	-	-	-	-	-	-
Human gamma globulin	-	-	-	-	-	-	-	-	-	-	-	-

a. In Elisa, OD (at 370 nm - background): > 1.5

b. In Elisa, OD (at 370 nm - background): < 0.5

Figure 1b

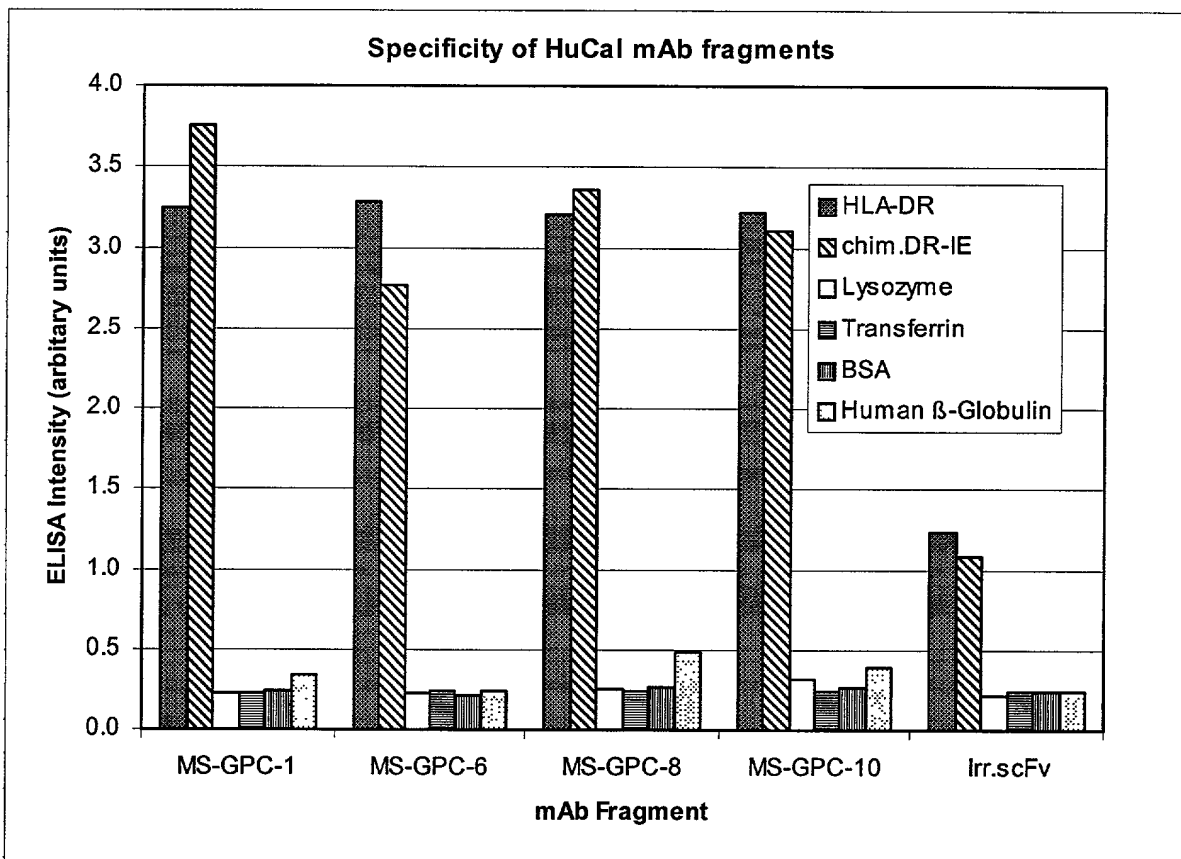


Figure 3

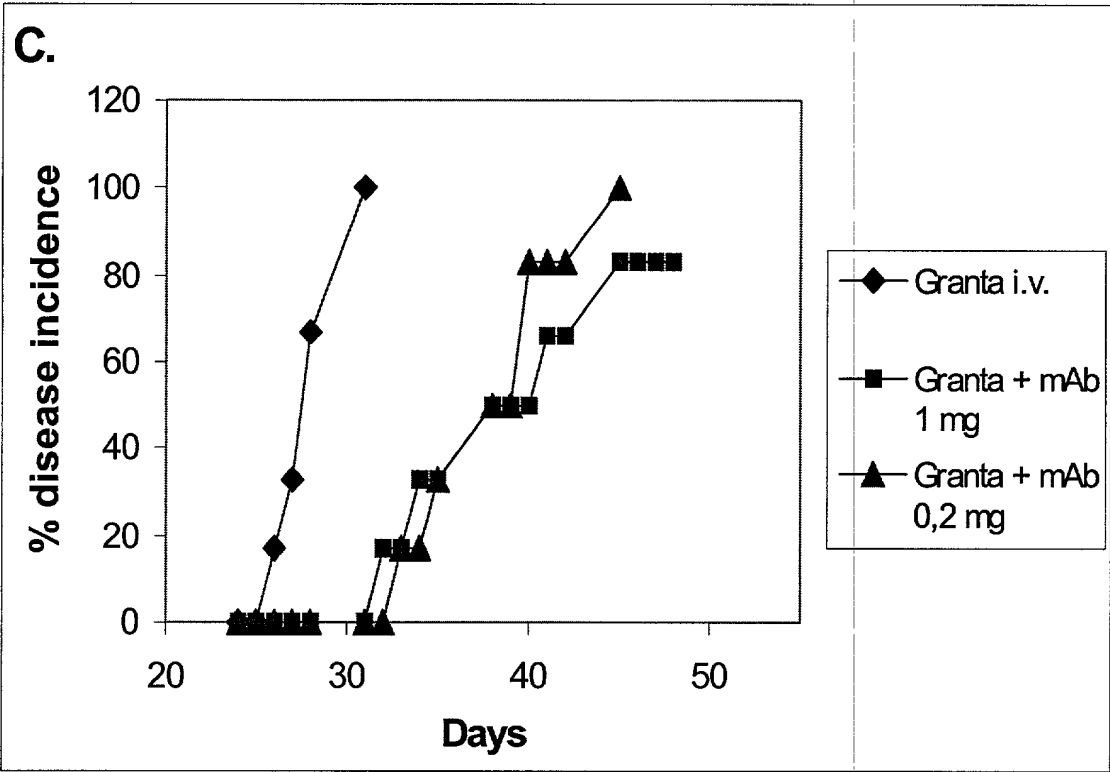


Figure 4

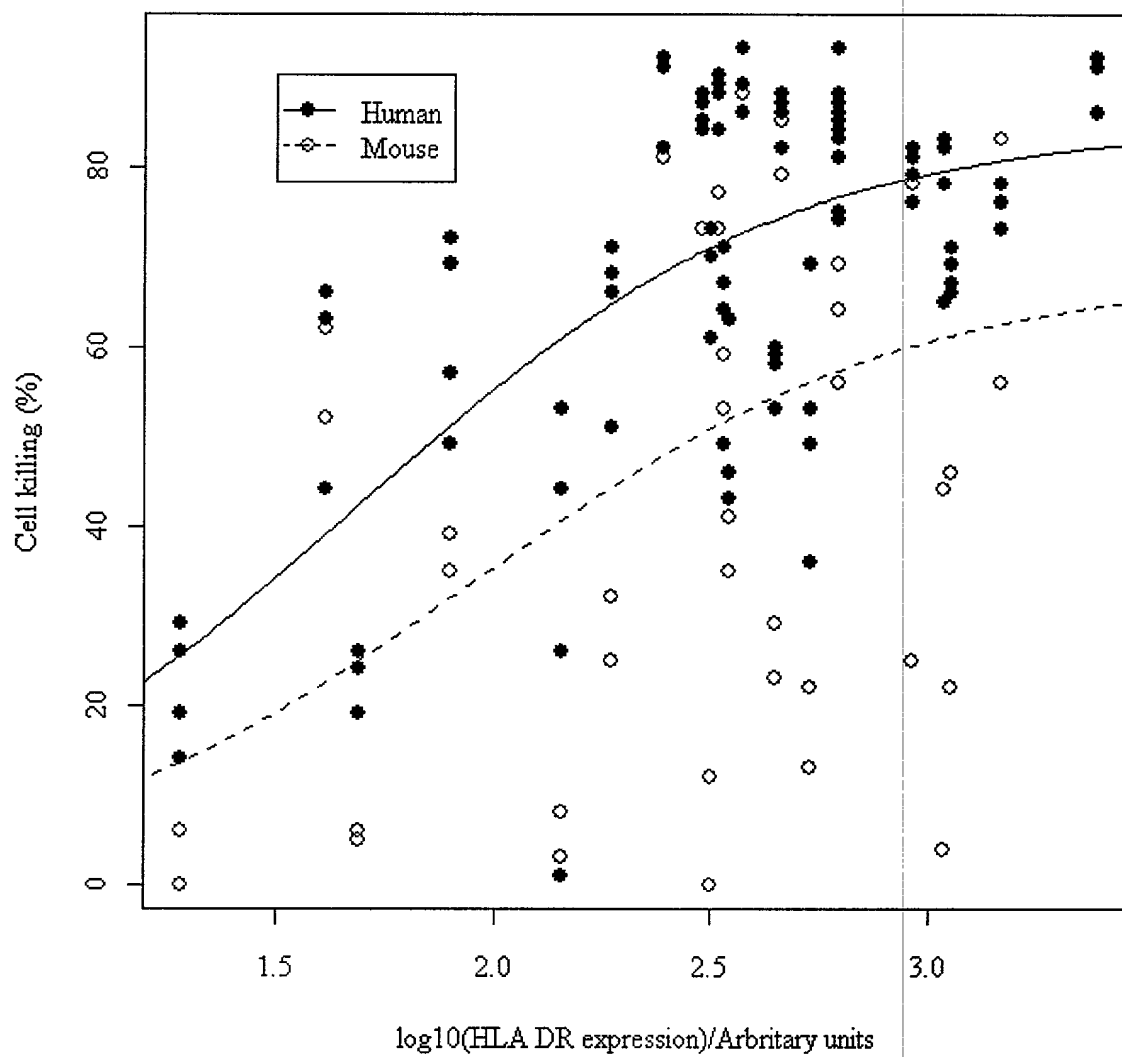


Figure 5

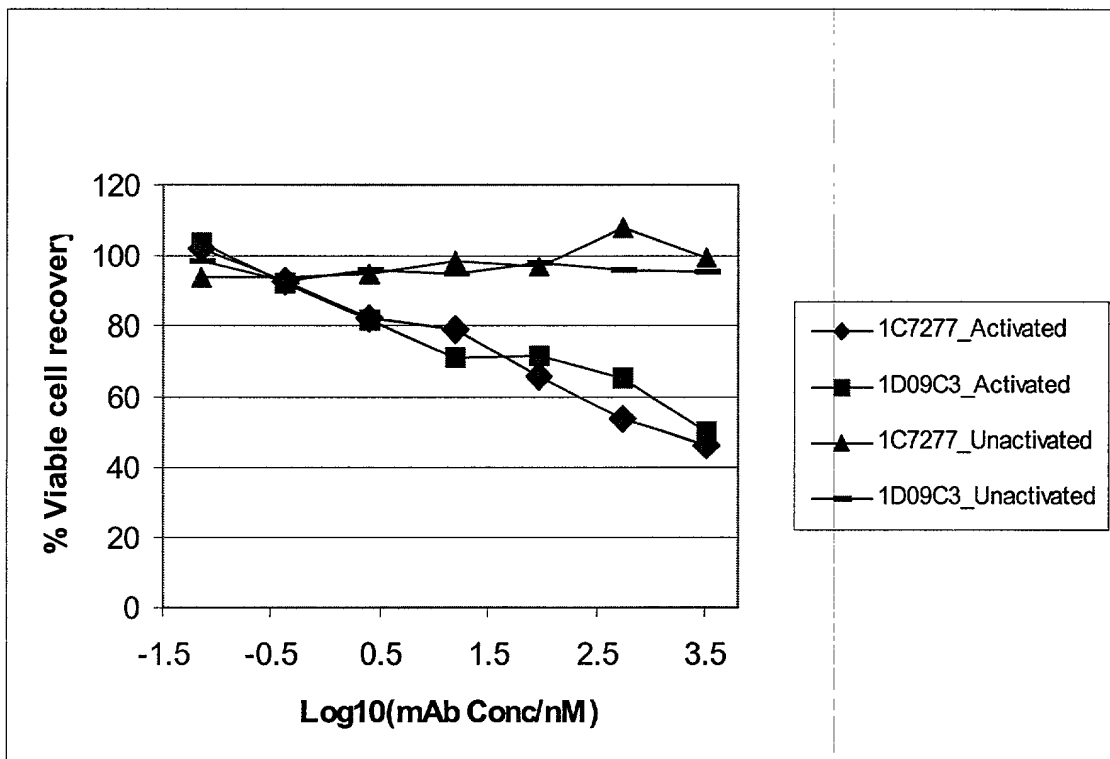


Figure 6a

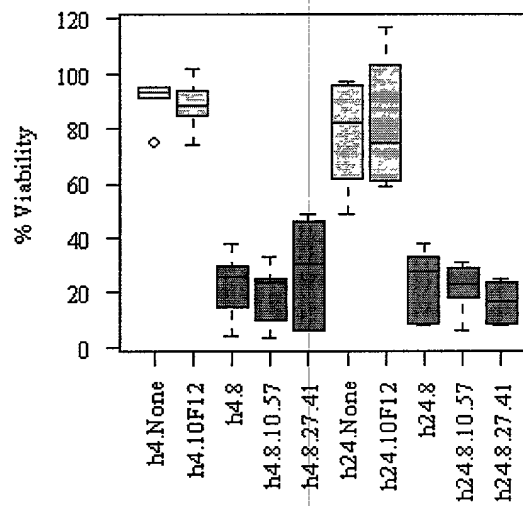
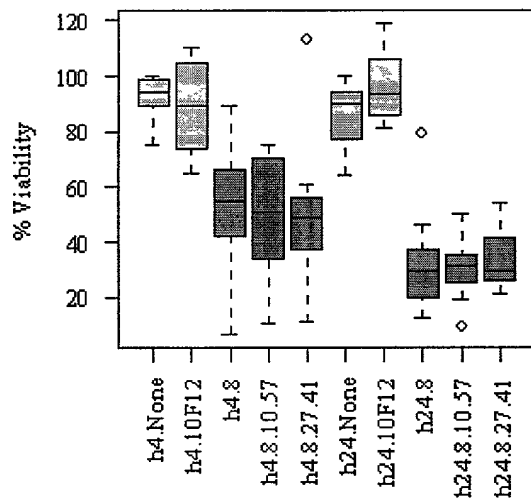


Figure 6b

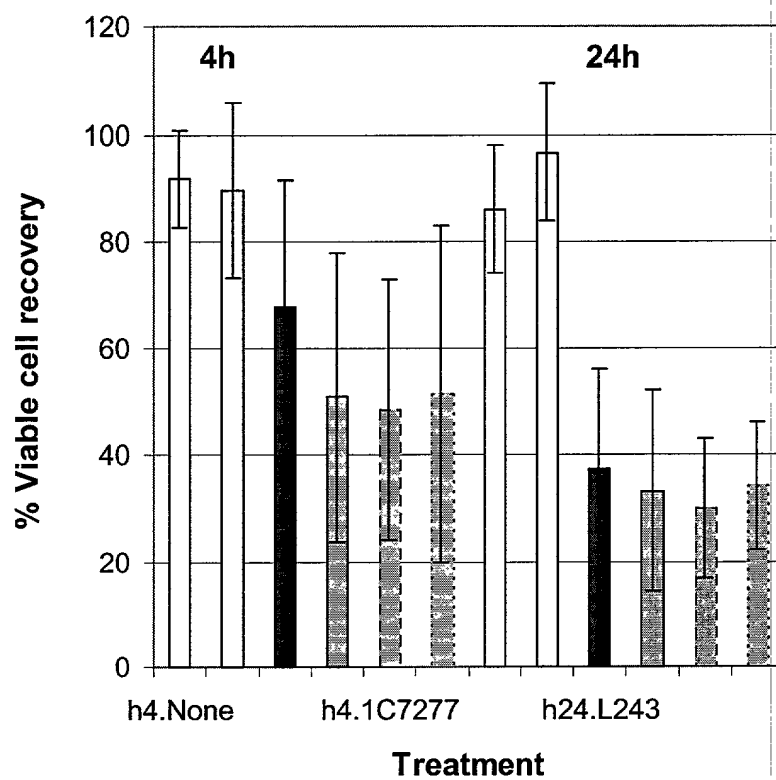


Figure 6c

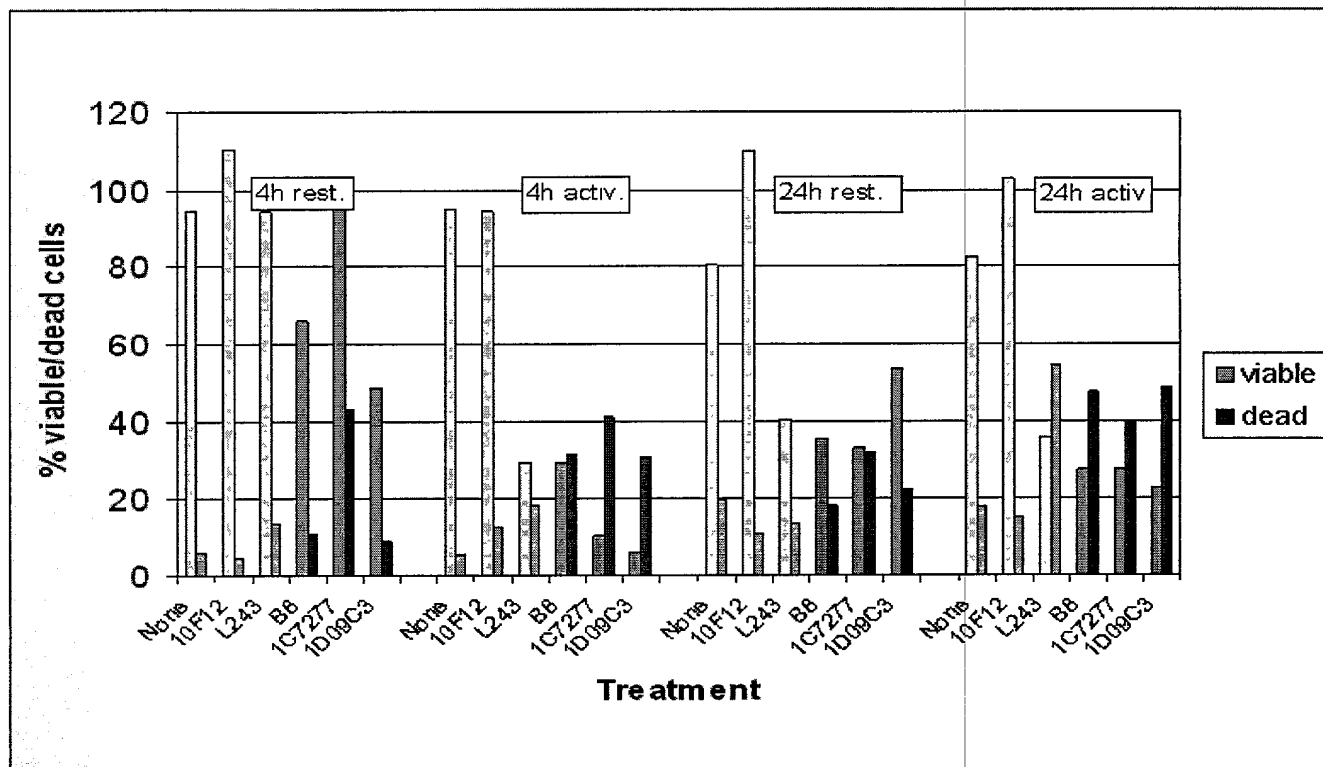


Figure 7a

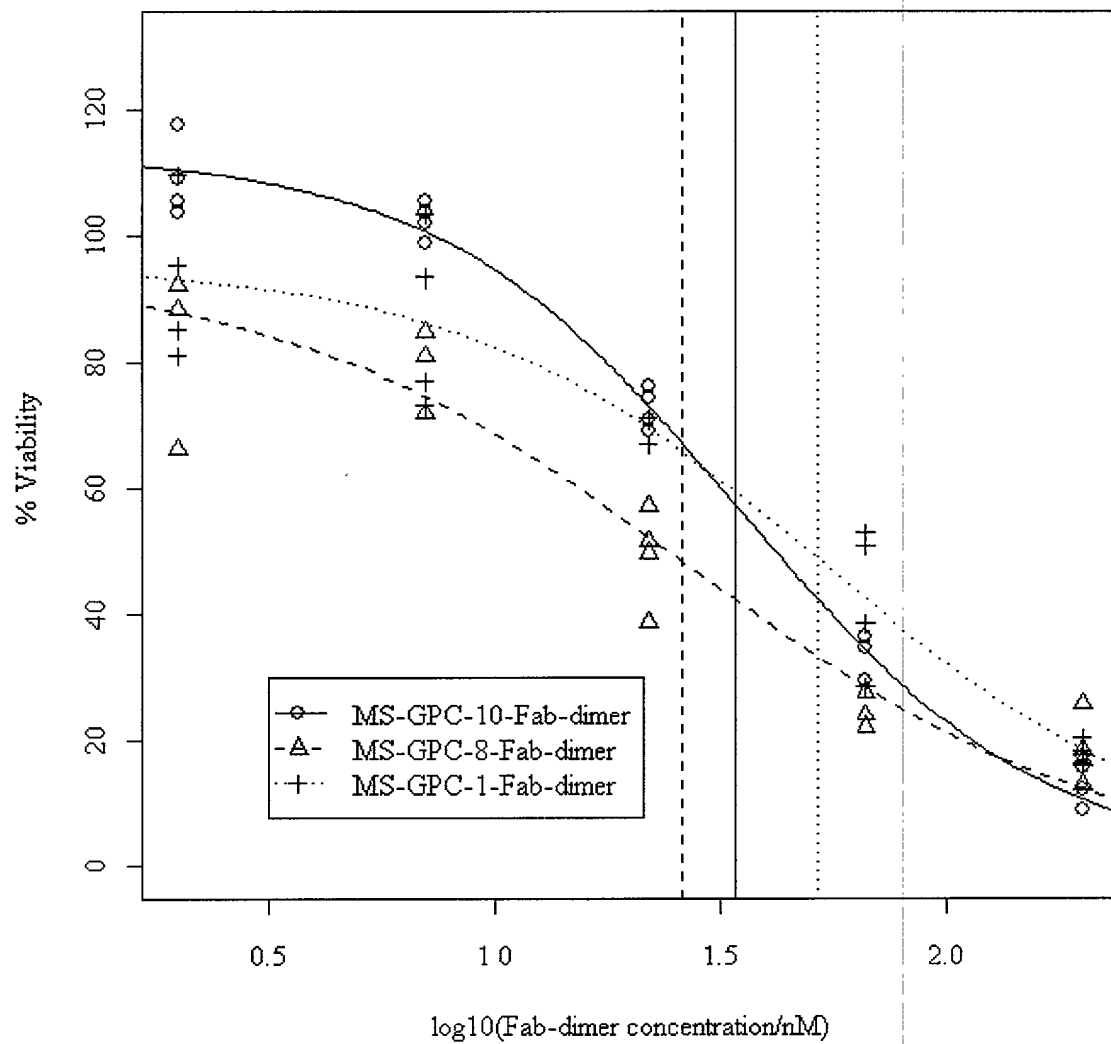


Figure 7b

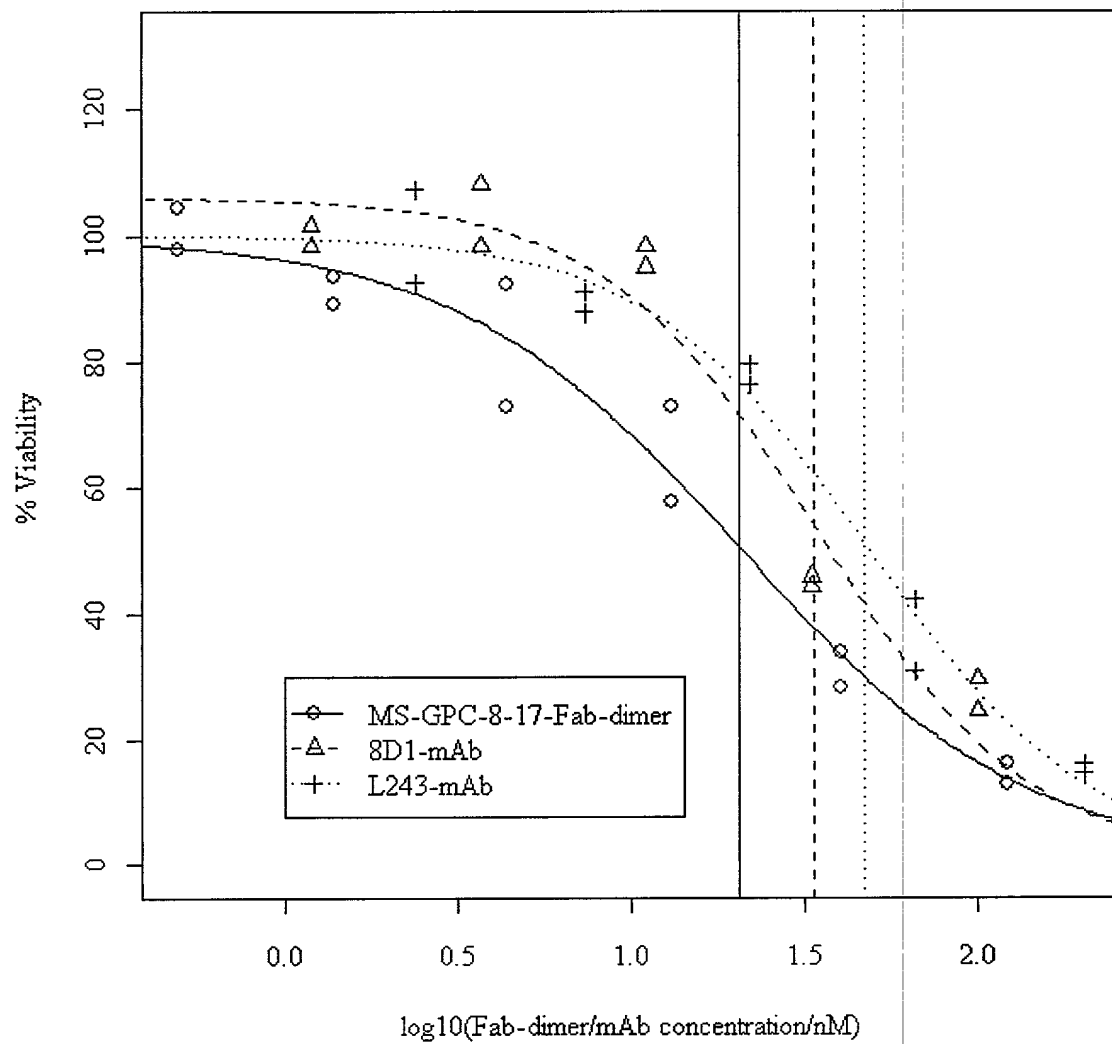


Figure 7c

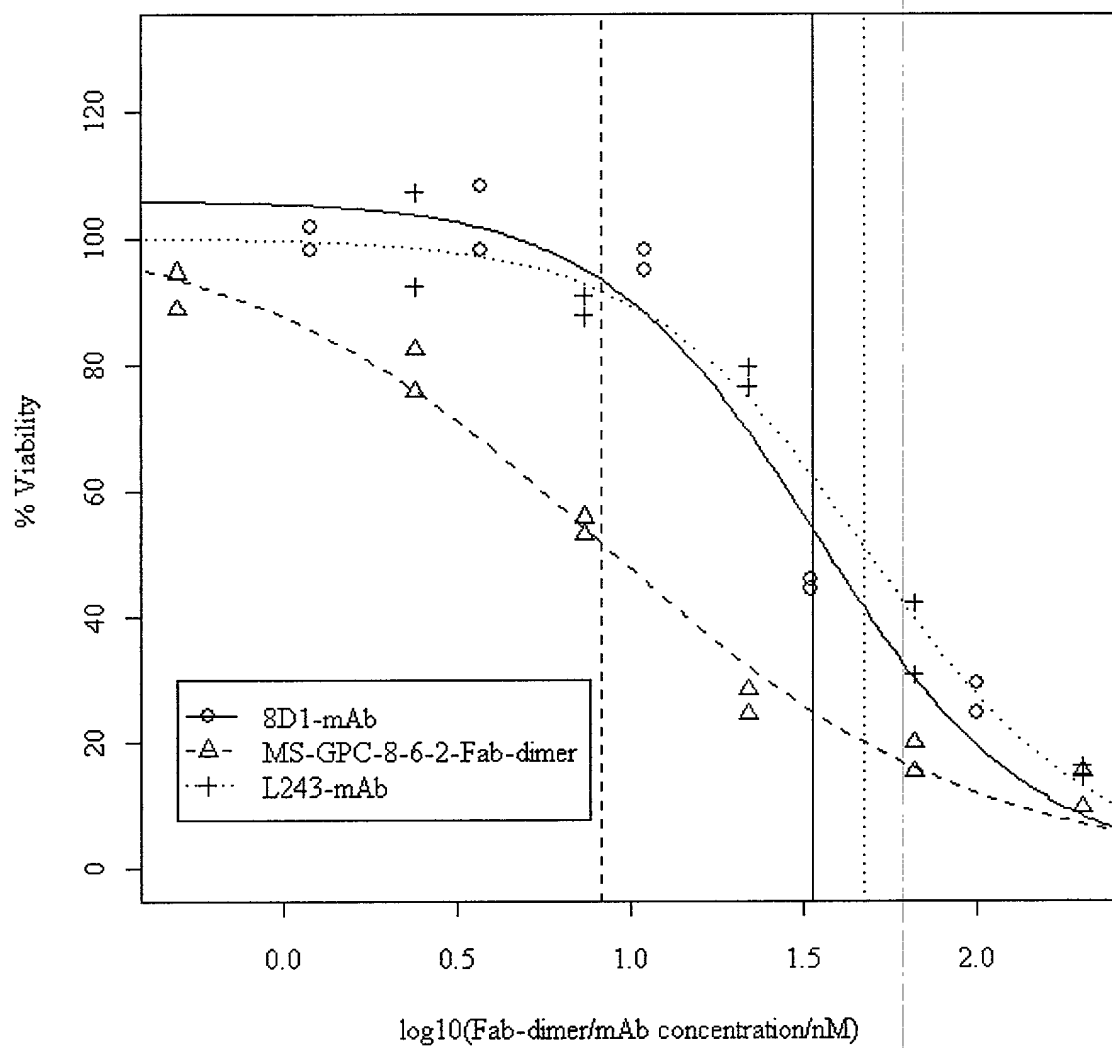


Figure 7d

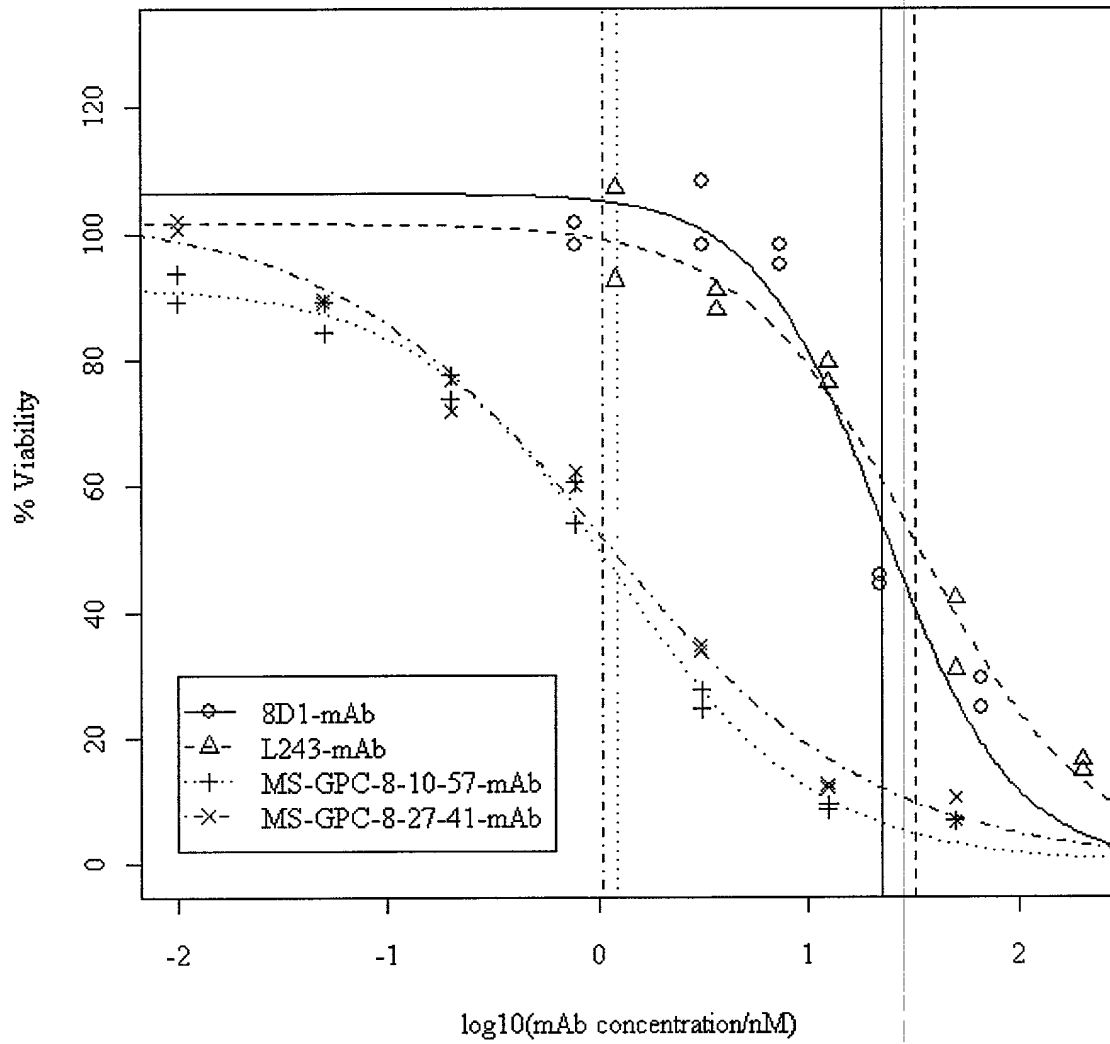


Figure 8a

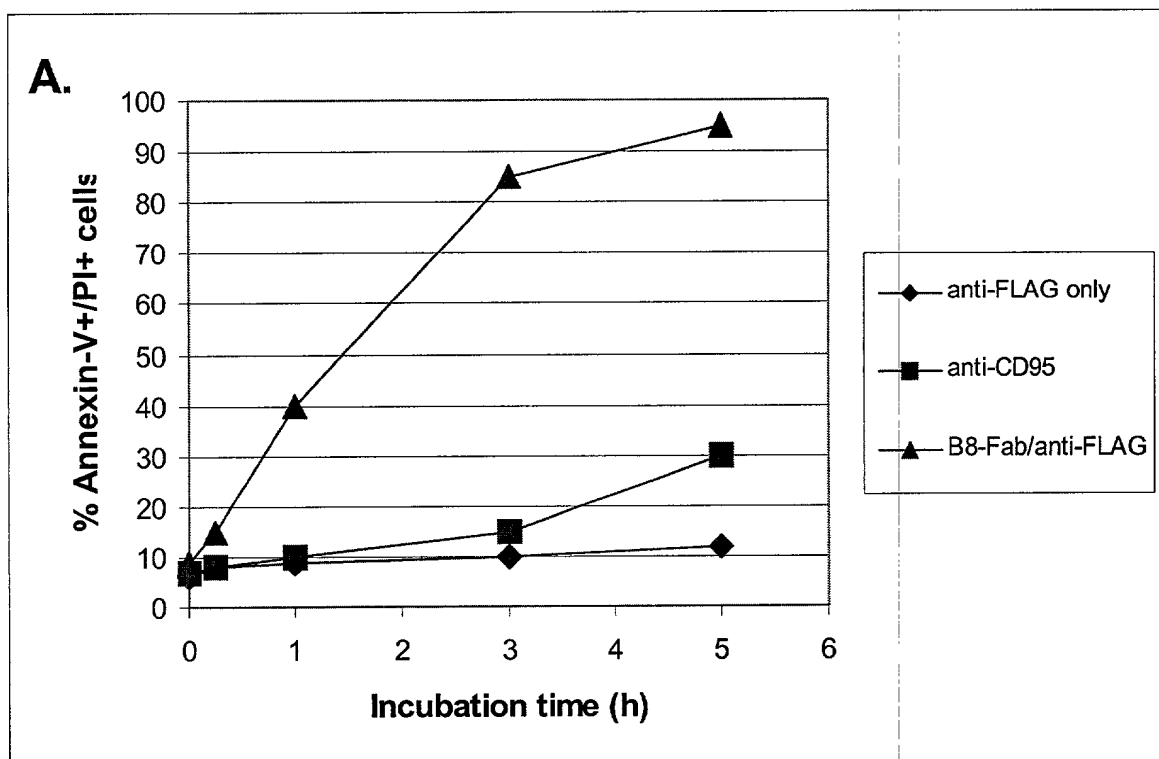


Figure 8b

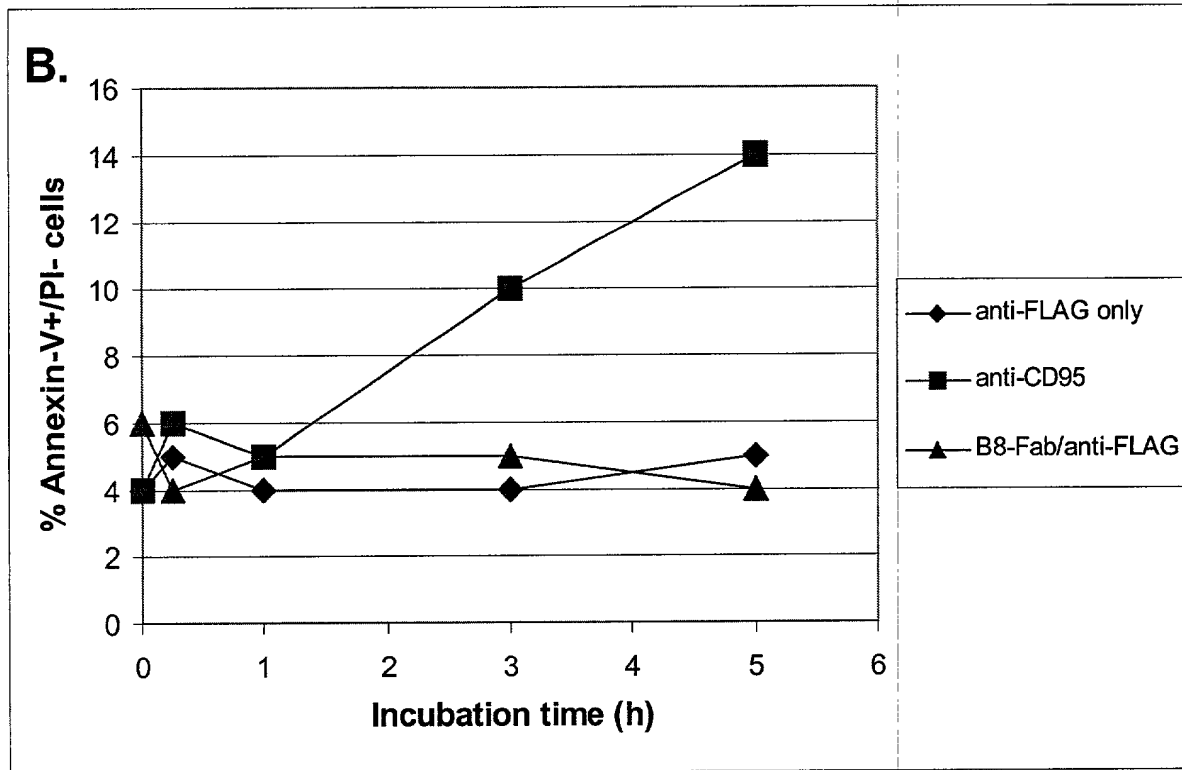


Figure 8c

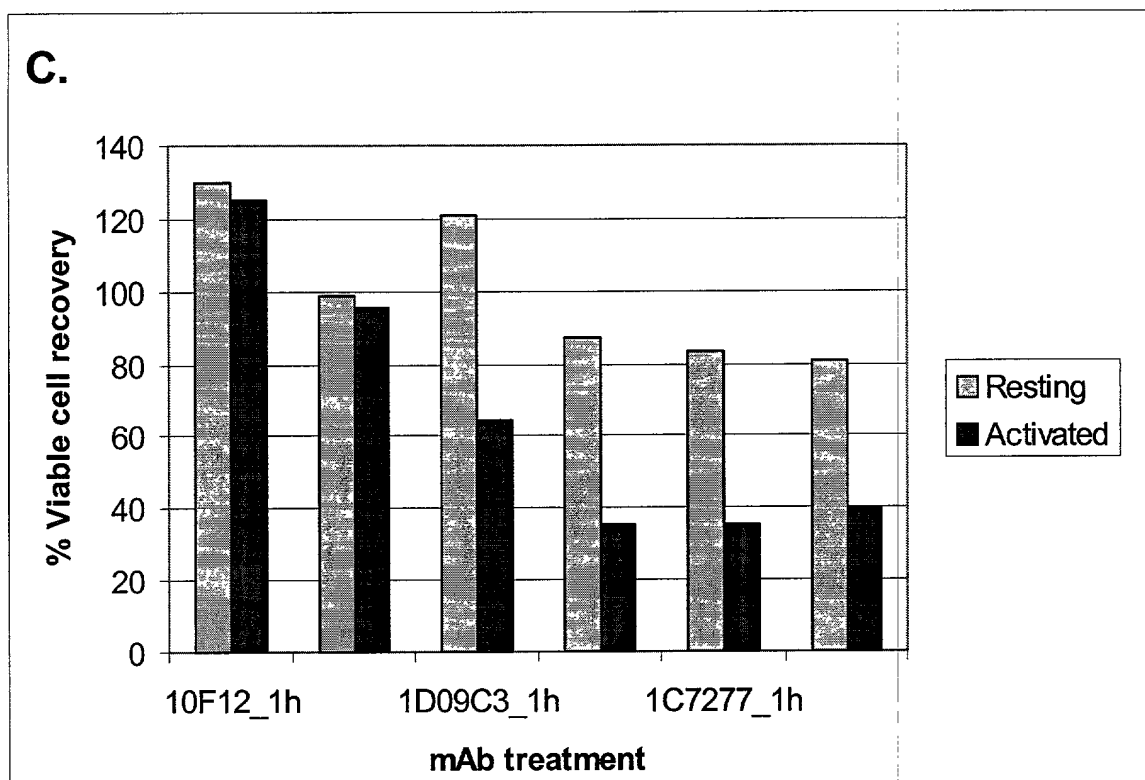


Figure 9a

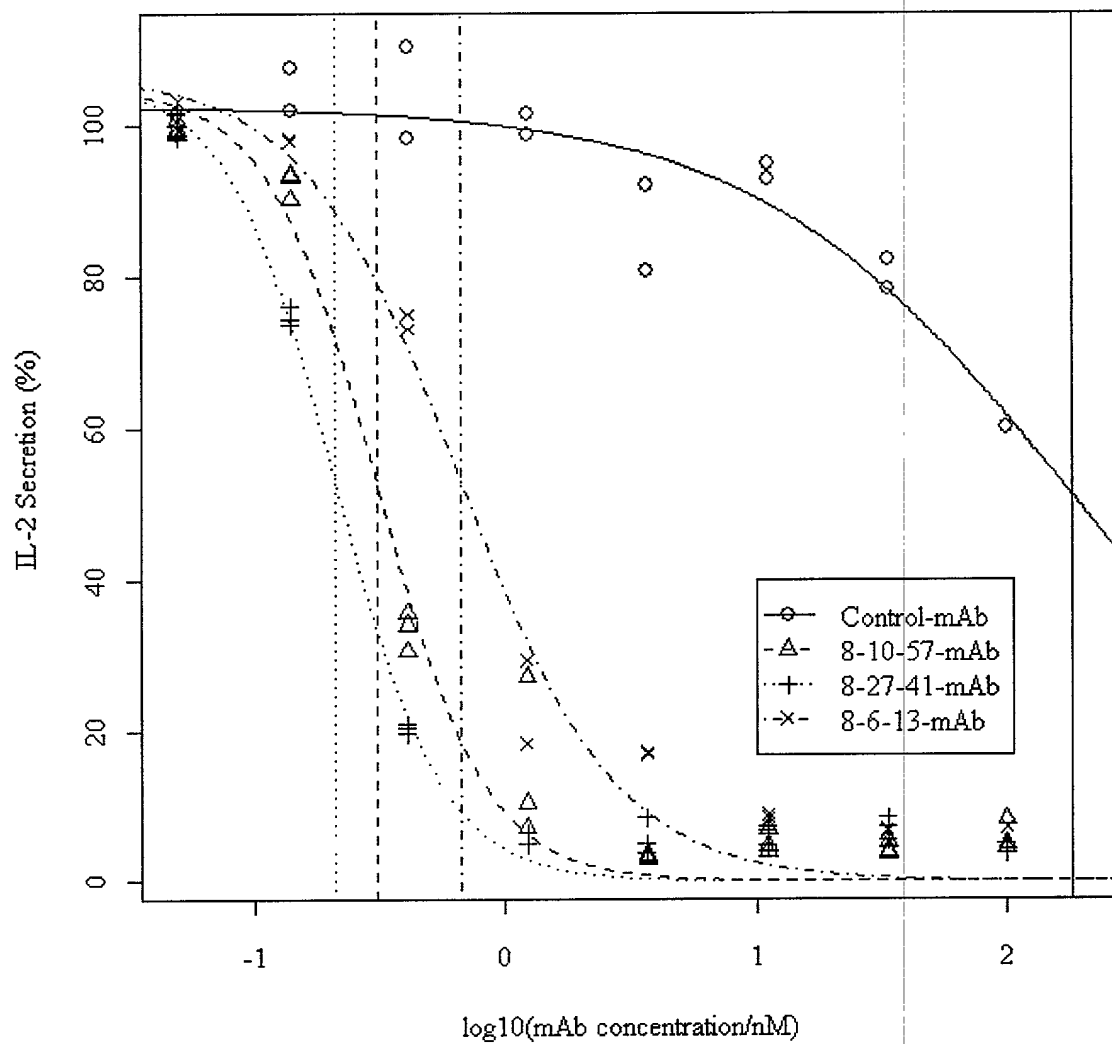


Figure 9b

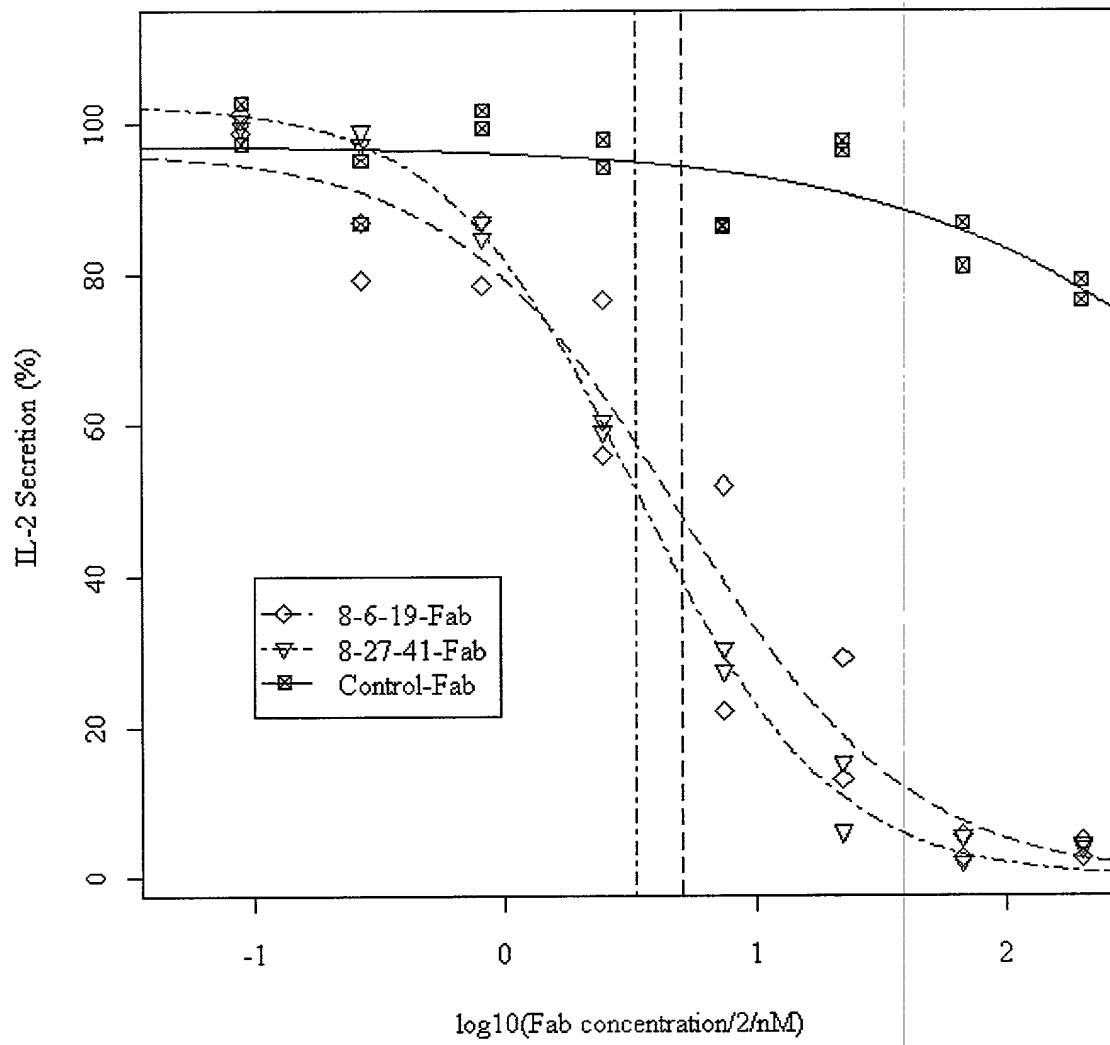


Figure 9c

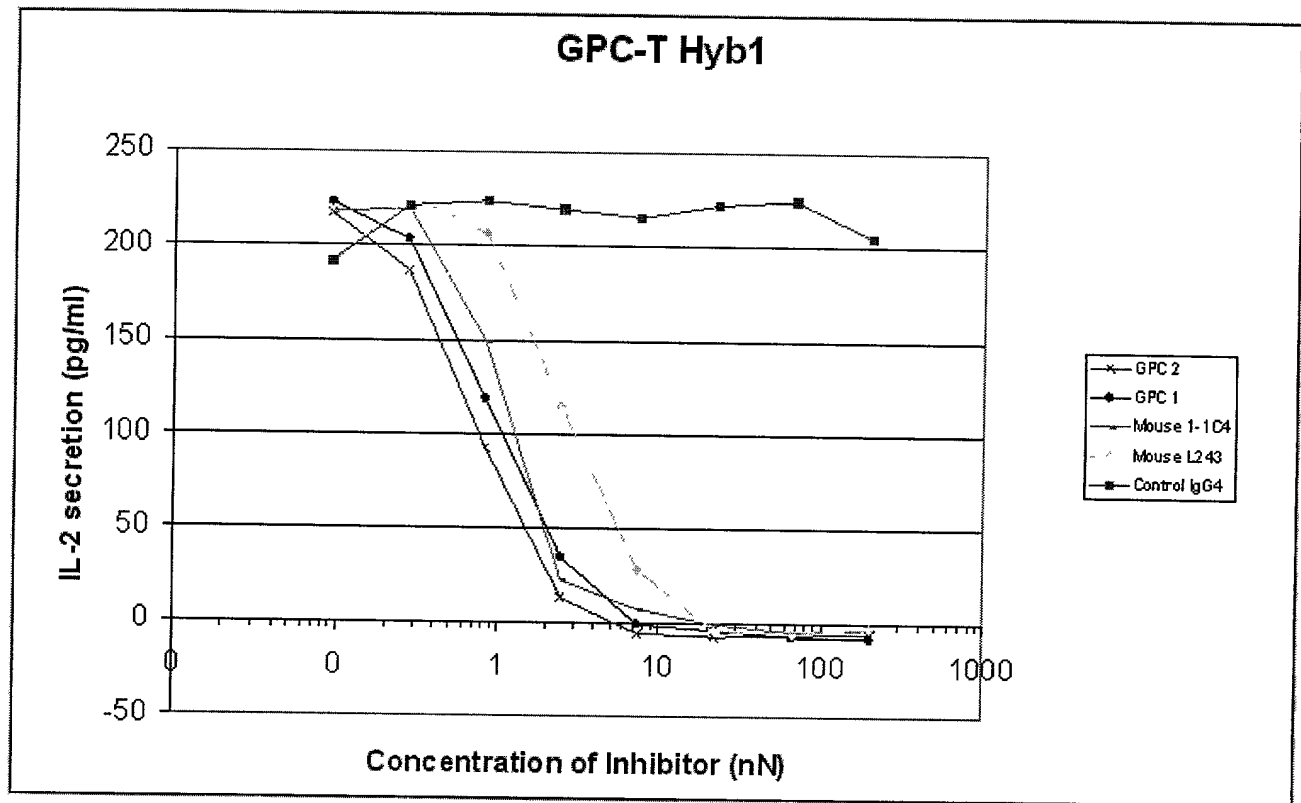


Figure 9d

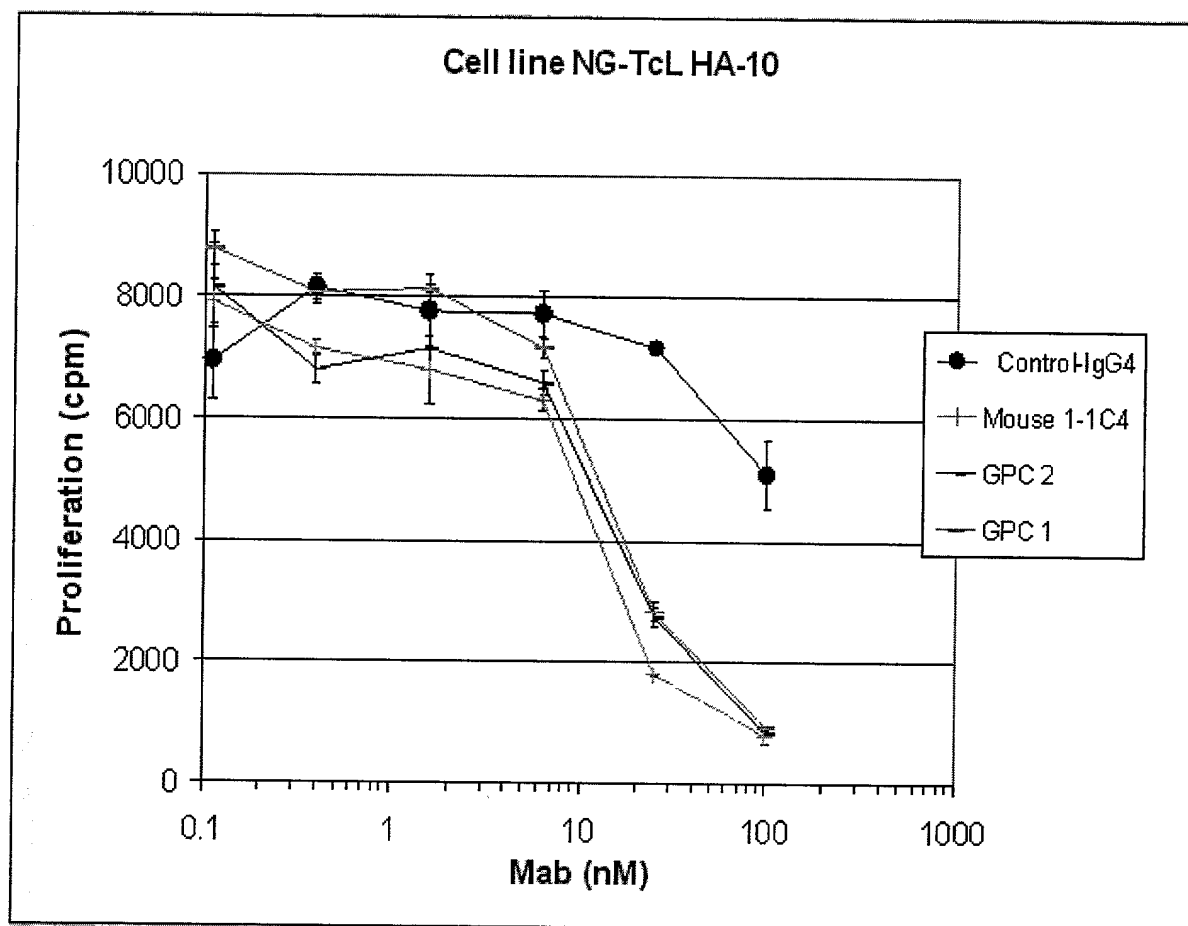


Figure 9e

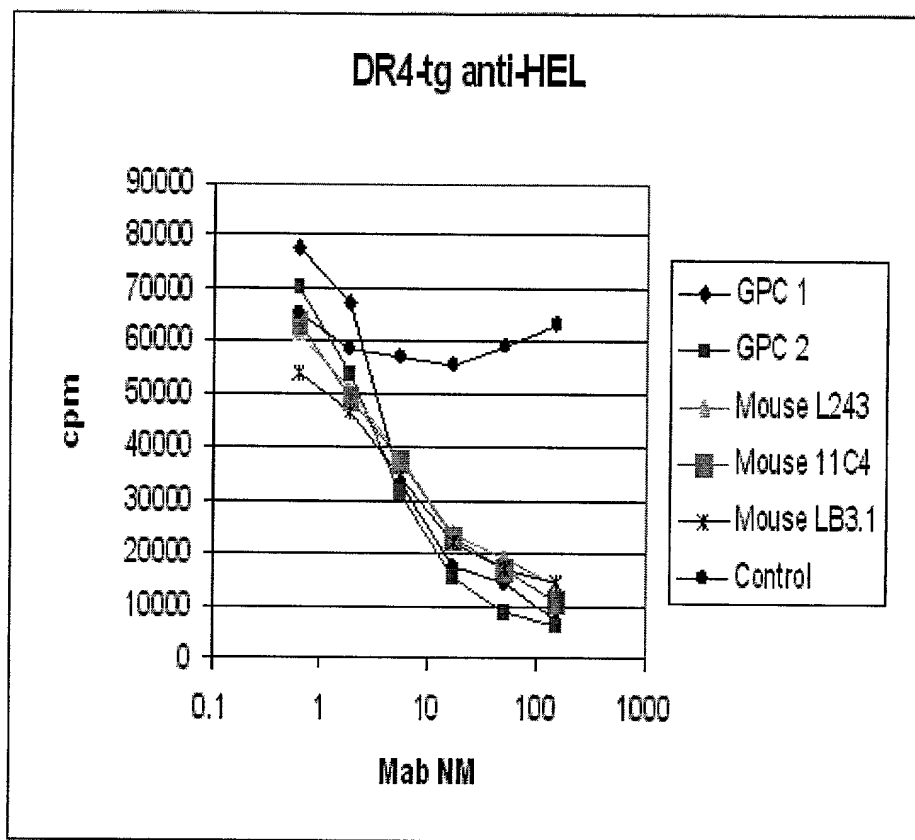


Figure 9g

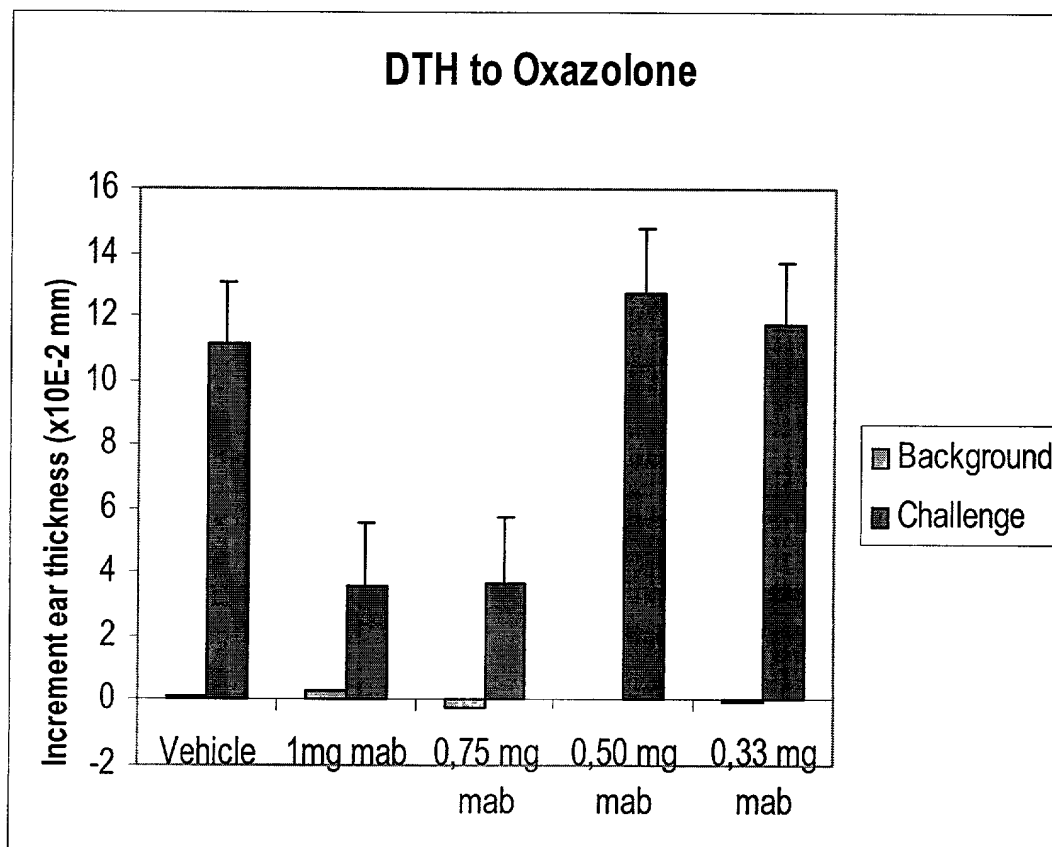
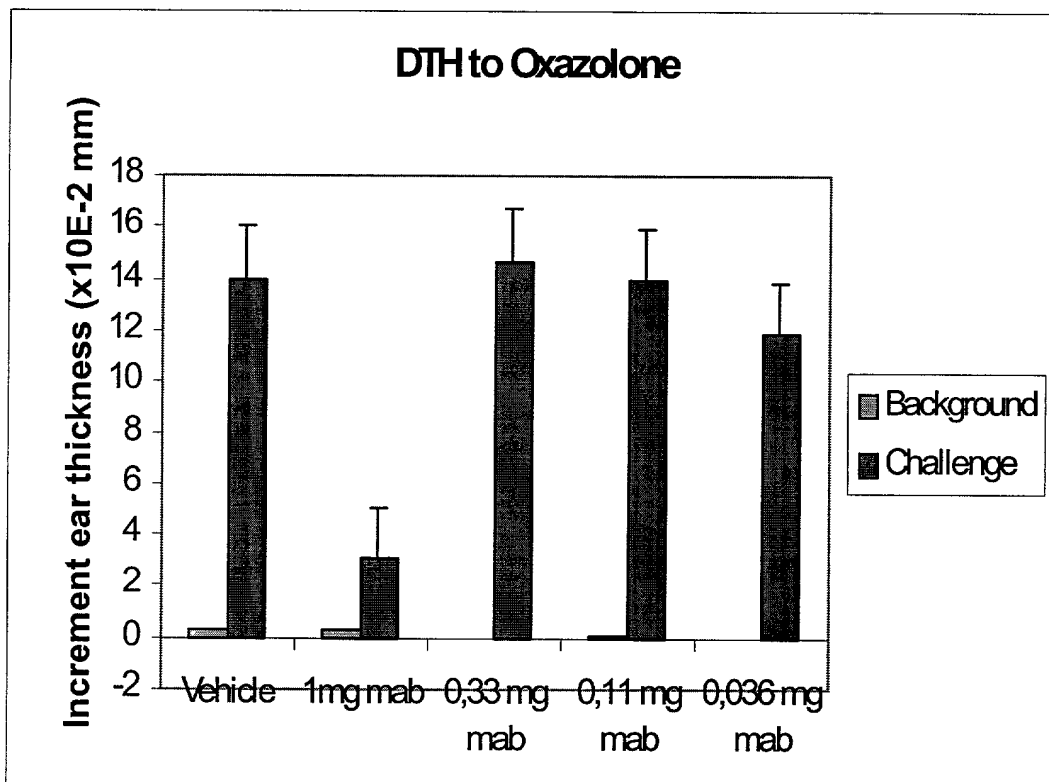
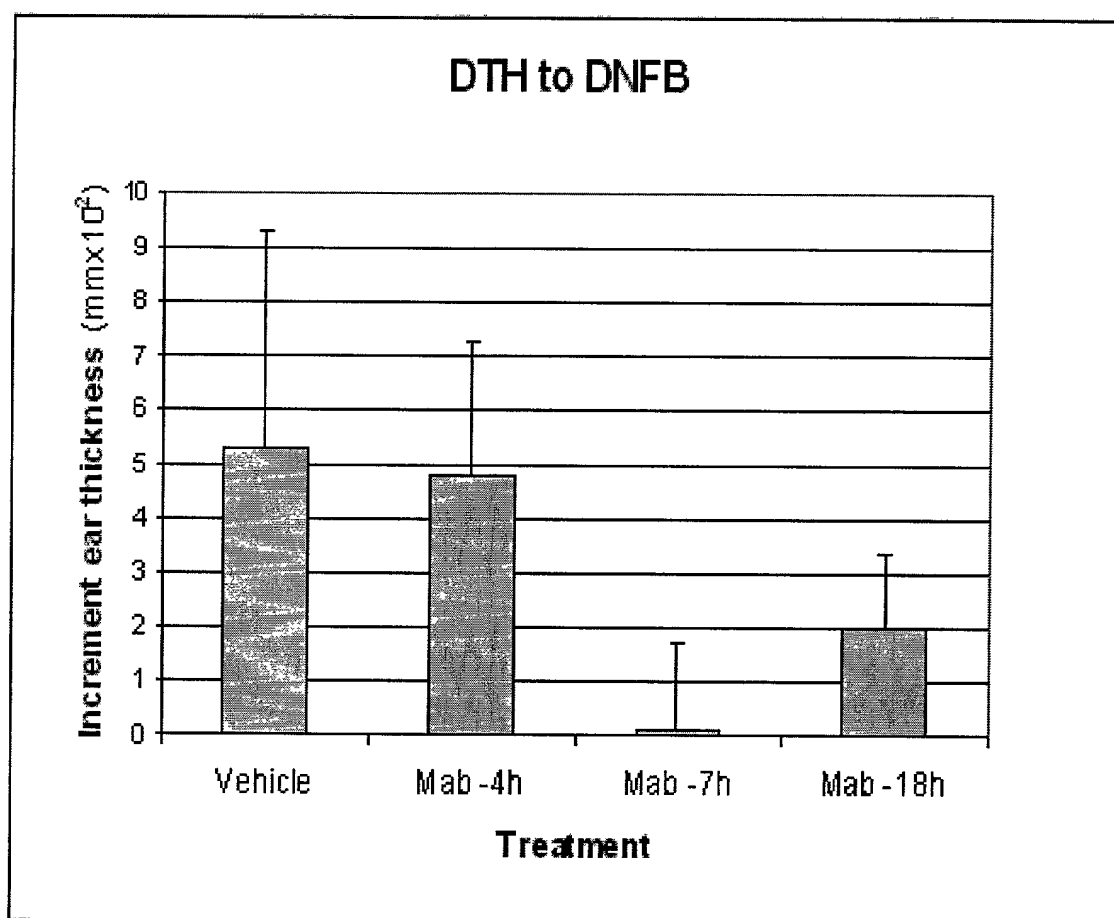
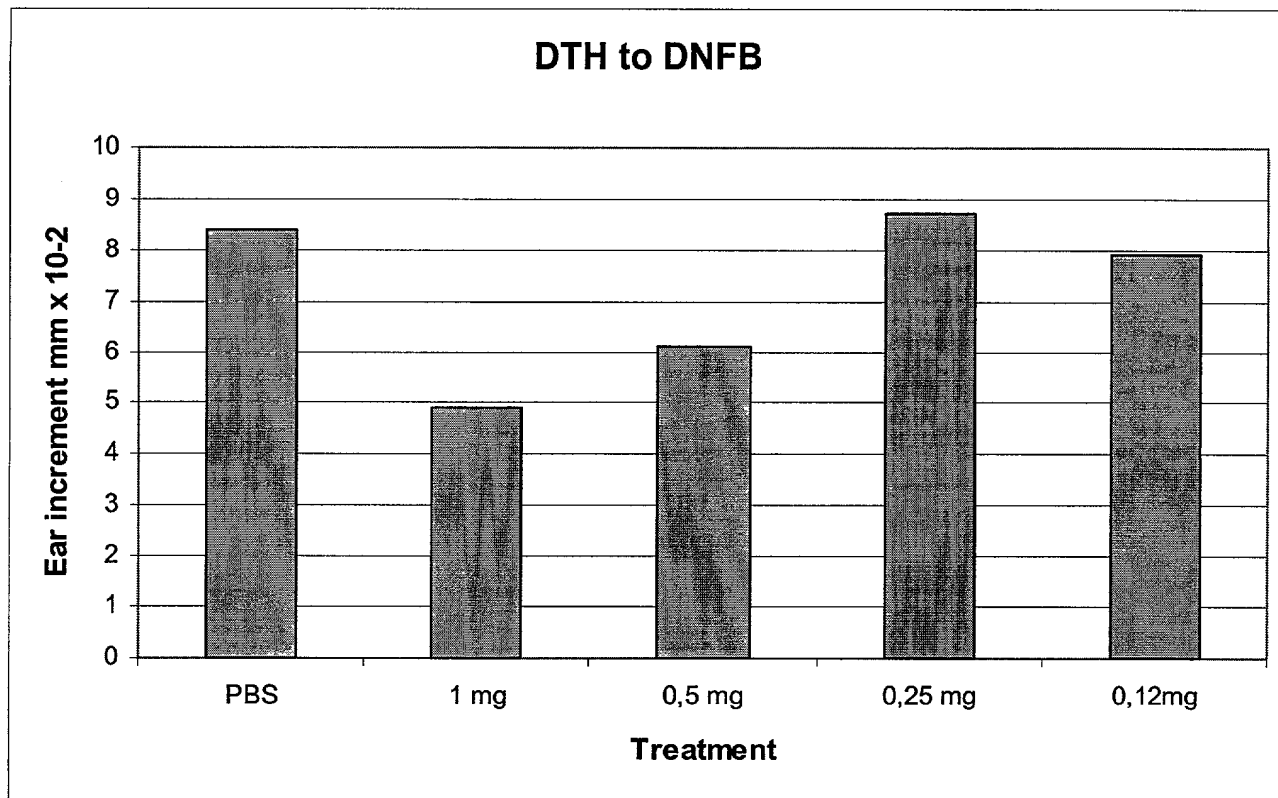


Figure 9h



mAb: 1D09C3

Figure 9I



mAb: 1D09C3

Figure 10

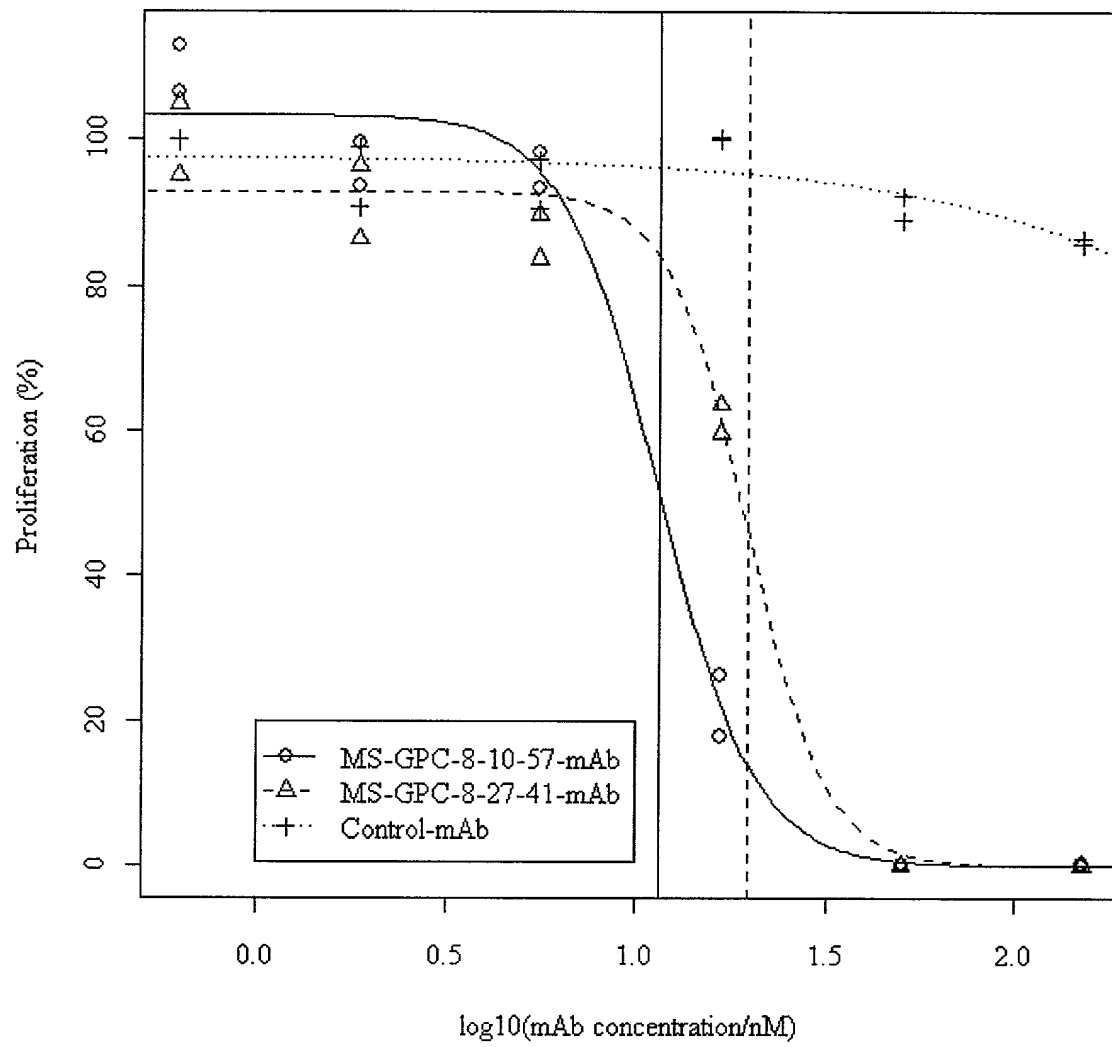


Figure 11

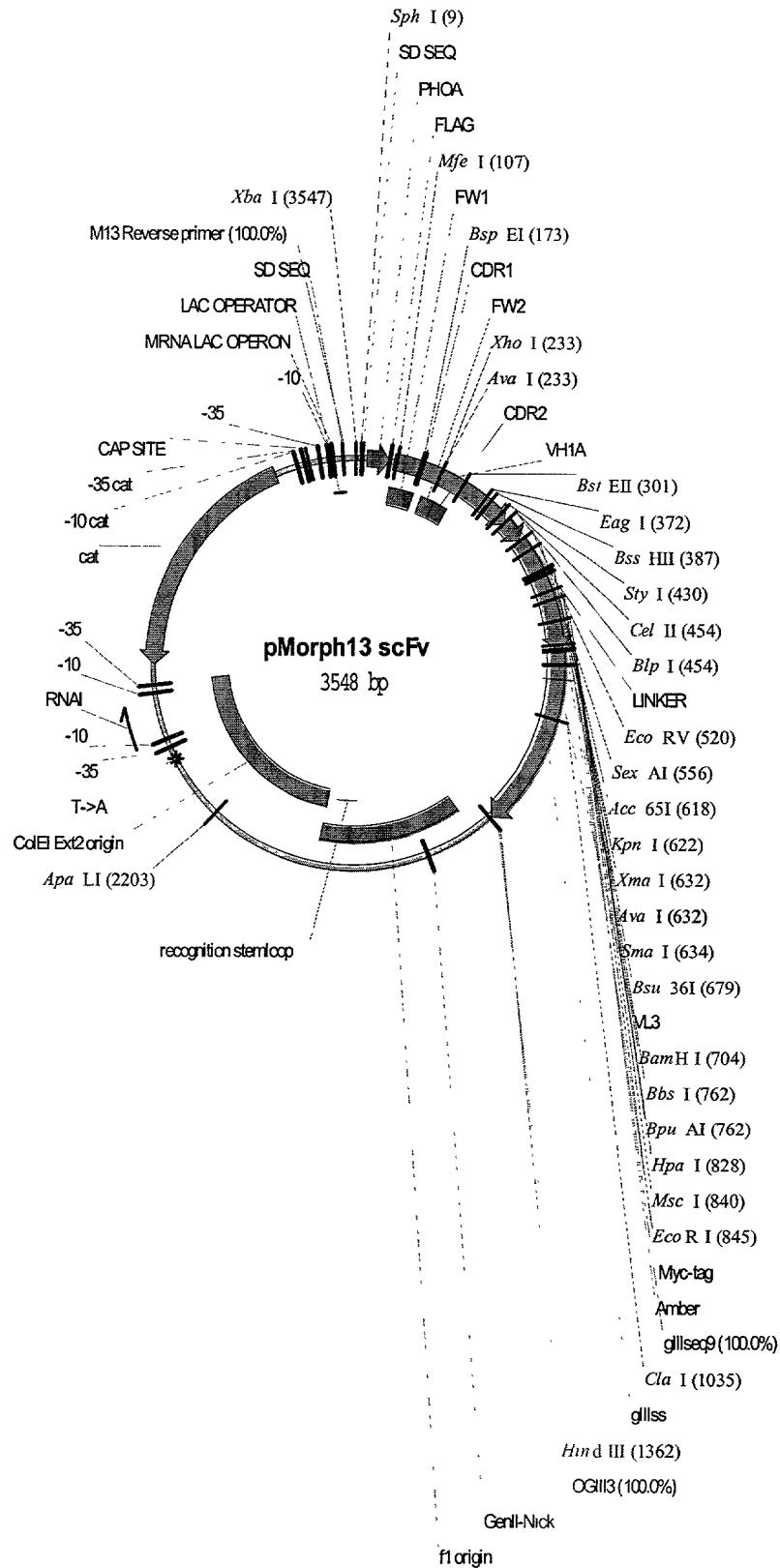


Figure 11 (cont.)

XbaISphI

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1 AGAGCATGCG TAGGAGAAAA TAAATGAAA CAAAGCACTA TTGCACTGGC  
TCTCGTACGC ATCCTCTTTT ATTTTACTTT GTTTCGTGAT AACGTGACCG

51 ACTCTTACCG TTGCTCTTCA CCCCTGTTAC CAAAGCCGAC TACAAAGATG  
TGAGAATGGC AACGAGAAGT GGGGACAATG GTTTCGGCTG ATGTTTCTAC

MfeI

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101 AAGTGCAATT GGTTCAGTCT GGCGCGGAAG TGAAAAAACC GGGCAGCAGC
TTCACGTAA CCAAGTCAGA CCGCGCCTTC ACTTTTTTGG CCCGTCGTCG

BspEI

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151 GTGAAAGTGA GCTGCAAAGC CTCCGGAGGC ACTTTTAGCA GCTATGCGAT  
CACTTTCCT CGACGTTTCG GAGGCCTCCG TGAAAATCGT CGATACGCTA

XhoI

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AvaI

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201 TAGCTGGGTG CGCCAAGCCC CTGGGCAGGG TCTCGAGTGG ATGGGCGGCA  
ATCGACCCAC GCGGTTCTGGG GACCCGTCCC AGAGCTCACC TACCCGCCGT

BstEII

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251 TTATTCCGAT TTTTGGCAGC GCGAACTACG CGCAGAAGTT TCAGGGCCGG  
AATAAGGCTA AAAACCGTGC CGCTTGATGC GCGTCTTCAA AGTCCCGGCC

BstEII

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301 GTGACCATTA CCGCGGATGA AAGCACCAGC ACCGCGTATA TGGAAGTGA
CACTGGTAAT GCGCCTACT TTCGTGGTCG TGGCGCATAT ACCTTGACTC

EagI

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BssHII

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351 CAGCCTGCGT AGCGAAGATA CGGCCGTGTA TTATTGCGCG CGTTATTATG
GTCGGACGCA TCGCTTCTAT GCCGGCACAT AATAACGCGC GCAATAATAC

StyI

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401 ATCGTATGTA TAATATGGAT TATTGGGGCC AAGGCACCCT GGTGACGGTT  
TAGCATACAT ATTATACCTA ATAACCCCGG TTCCGTGGGA CCACTGCCAA

BlpI

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CelII

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451 AGCTCAGCGG GTGGCGGTTC TGGCGGCGGT GGGAGCGGTG GCGGTGGTTC  
TCGAGTCGCC CACCGCCAAG ACCGCCGCCA CCCTCGCCAC CGCCACCAAG

EcoRV

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501 TGGCGGTGGT GGTTCGATA TCGAACTGAC CCAGCCGCCT TCAGTGAGCG

ACCGCCACCA CCAAGGCTAT AGCTTGACTG GGTCGGCGGA AGTCACTCGC

SexAI

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551 TTGCACCAGG TCAGACCGCG CGTATCTCGT GTAGCGGCGA TGCCTGGGC  
AACGTGGTCC AGTCTGGCGC GCATAGAGCA CATCGCCGCT ACGCGACCCG

XmaI

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KpnI

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Acc65I

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SmaI

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AvaI

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601 GATAAATACG CGAGCTGGTA CCAGCAGAAA CCCGGGCAGG CGCCAGTTCT
CTATTTATGC GCTCGACCAT GGTCGTCTTT GGGCCCGTCC GCGGTCAAGA

Bsu36I

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651 GGTGATTTAT GATGATTCTG ACCGTCCCTC AGGCATCCCG GAACGCTTTA  
CCACTAAATA CTAATAAGAC TGGCAGGGAG TCCGTAGGGC CTTGCGAAAT

BamHI

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701 GCGGATCCAA CAGCGGCAAC ACCGCGACCC TGACCATTAG CGGCACTCAG
CGCCTAGGTT GTCGCCGTTG TGGCGCTGGG ACTGGTAATC GCCGTGAGTC

BpuAI

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BbsI

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751 GCGGAAGACG AAGCGGATTA TTATTGCCAG AGCTATGACG CTCATATGCG
CGCCTTCTGC TTCGCCTAAT AATAACGGTC TCGATACTGC GAGTATACGC

HpaI

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MscI

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EcoRI

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801 TCCTGTGTTT GGCGGCGGCA CGAAGTTAAC CGTTCTTGGC CAGGAATTCG  
AGGACACAAA CCGCCGCCGT GCTTCAATTG GCAAGAACCG GTCCTTAAGC

851 AGCAGAAGCT GATCTCTGAG GAGGATCTGA ACTAGGGTGG TGGCTCTGGT  
TCGTCTTCGA CTAGAGACTC CTCCTAGACT TGATCCCACC ACCGAGACCA

901 TCCGGTGATT TTGATTATGA AAAGATGGCA AACGCTAATA AGGGGGCTAT  
AGGCCACTAA AACTAATACT TTTCTACCGT TTGCGATTAT TCCCCGATA

gIIIseq9 100.0%

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951 GACCGAAAAT GCCGATGAAA ACGCGCTACA GTCTGACGCT AAAGGCAAAC  
CTGGCTTTTA CGGCTACTTT TGC GCGATGT CAGACTGCGA TTTCCGTTTG

ClaI

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1001 TTGATTCTGT CGCTACTGAT TACGGTGCTG CTATCGATGG TTTCATTGGT
AACTAAGACA GCGATGACTA ATGCCACGAC GATAGCTACC AAAGTAACCA

1051 GACGTTTCCG GCCTTGCTAA TGGTAATGGT GCTACTGGTG ATTTTGCTGG
CTGCAAAGGC CGGAACGATT ACCATTACCA CGATGACCAC TAAAACGACC

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1101 CTCTAATTCC CAAATGGCTC AAGTCGGTGA CGGTGATAAT TCACCTTTAA
    GAGATTAAGG GTTTACCGAG TTCAGCCACT GCCACTATTA AGTGGAAATT

1151 TGAATAATTT CCGTCAATAT TTACCTTCCC TCCCTCAATC GGTGAATGT
    ACTTATTAAA GGCAGTTATA AATGGAAGGG AGGGAGTTAG CCAACTTACA

1201 CGCCCTTTTG TCTTTGGCGC TGGTAAACCA TATGAATTTT CTATTGATTG
    GCGGGAAAAC AGAAACCGCG ACCATTTGGT ATACTTAAAA GATAACTAAC

1251 TGACAAAATA AACTTATTCC GTGGTGTCTT TCGGTTTCTT TTATATGTTG
    ACTGTTTTAT TTGAATAAGG CACCACAGAA ACGCAAAGAA AATATACAAC

1301 CCACCTTTAT GTATGTATTT TCTACGTTTG CTAACATACT GCGTAATAAG
    GGTGGAAATA CATACTAAA AGATGCAAAC GATTGTATGA CGCATTATTC

                                HindIII
                                ~~~~~~
1351 GAGTCTTGAT AAGCTTGACC TGTGAAGTGA AAAATGGCGC AGATTGTGCG
    CTCGAACTA TTCGAACTGG ACACTTCACT TTTTACCGCG TCTAACACGC
                                OGIII3 100.0%
                                =====

1401 ACATTTTTTT TGTCTGCCGT TTAATGAAAT TGTAAACGTT AATATTTTGT
    TGTAACAAAA ACAGACGGCA AATTACTTTA ACATTTGCAA TTATAAAACA

1451 TAAAATTCGC GTTAAATTTT TGTAAATCA GCTCATTTTT TAACCAATAG
    ATTTTAAGCG CAATTTAAAA ACAATTTAGT CGAGTAAAAA ATTGGTTATC

1501 GCCGAAATCG GCAAAATCCC TTATAAATCA AAAGAATAGA CCGAGATAGG
    CGGCTTTAGC CGTTTTAGGG AATATTTAGT TTTCTTATCT GGCTCTATCC

1551 GTTGAGTGTT GTTCCAGTTT GGAACAAGAG TCCACTATTA AGAACGTGG
    CAACTCACAA CAAGGTCAAA CCTTGTTCTC AGGTGATAAT TTCTTGACC

1601 ACTCCAACGT CAAAGGGCGA AAAACCGTCT ATCAGGGCGA TGGCCCACTA
    TGAGGTTGCA GTTTCCCGCT TTTTGGCAGA TAGTCCCGCT ACCGGGTGAT

1651 CGAGAACCAT CACCCTAATC AAGTTTTTTT GGGTCGAGGT GCCGTAAAGC
    GCTCTTGTA GTGGGATTAG TTCAAAAAAC CCCAGCTCCA CGGCATTTTC

1701 ACTAAATCGG AACCTTAAAG GGAGCCCCCG ATTTAGAGCT TGACGGGGAA
    TGATTTAGCC TTGGGATTTC CCTCGGGGGC TAAATCTCGA ACTGCCCCCT

1751 AGCCGGCGAA CGTGGCGAGA AAGGAAGGGA AGAAAGCGAA AGGAGCGGGC
    TCGGCCGCTT GCACCGCTCT TTCCTTCCCT TCTTTCGCTT TCCTCGCCCG

1801 GCTAGGGCGC TGGCAAGTGT AGCGGTCACG CTGCGCGTAA CCACCACACC
    CGATCCCGCG ACCGTTCACA TCGCCAGTGC GACGCGCATT GGTGGTGTGG

1851 CGCCGCGCTT AATGCGCCGC TACAGGGCGC GTGCTAGCCA TGTGAGCAAA
    GCGGCGCGAA TTACGCGGCG ATGTCCCGCG CACGATCGGT ACACTCGTTT

1901 AGGCCAGCAA AAGGCCAGGA ACCGTAAAAA GGCCGCGTTG CTGGCGTTTT
    TCCGGTCGTT TTCCGGTCCT TGGCATTTTT CCGGCGCAAC GACCGCAAAA

1951 TCCATAGGCT CCGCCCCCTT GACGAGCATC ACAAAAATCG ACGCTCAAGT
    AGGTATCCGA GCGGGGGGGA CTGCTCGTAG TGTTTTTAGC TGCGAGTTCA

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2001	CAGAGGTGGC	GAAACCCGAC	AGGACTATAA	AGATACCAGG	CGTTTCCCCC
	GTCTCCACCG	CTTTGGGCTG	TCCTGATATT	TCTATGGTCC	GCAAAGGGGG
2051	TGGAAGCTCC	CTCGTGCGCT	CTCCTGTTCC	GACCCTGCCG	CTTACCGGAT
	ACCTTCGAGG	GAGCACGCGA	GAGGACAAGG	CTGGGACGGC	GAATGGCCTA
2101	ACCTGTCCGC	CTTTCTCCCT	TCGGGAAGCG	TGGCGCTTTC	TCATAGCTCA
	TGGACAGGCG	GAAAGAGGGA	AGCCCTTCGC	ACCGCGAAAG	AGTATCGAGT
2151	CGCTGTAGGT	ATCTCAGTTC	GGTGTAGGTC	GTTGCTCCA	AGCTGGGCTG
	GCGACATCCA	TAGAGTCAAG	CCACATCCAG	CAAGCGAGGT	TCGACCCGAC
	ApaLI				
	~~~~~				
2201	TGTGCACGAA	CCCCCGTTC	AGTCCGACCG	CTGCGCCTTA	TCCGGTAACT
	ACACGTGCTT	GGGGGGCAAG	TCAGGCTGGC	GACGCGGAAT	AGGCCATTGA
2251	ATCGTCTTGA	GTCCAACCCG	GTAAGACACG	ACTTATCGCC	ACTGGCAGCA
	TAGCAGAACT	CAGGTTGGGC	CATTCTGTGC	TGAATAGCGG	TGACCGTCGT
2301	GCCACTGGTA	ACAGGATTAG	CAGAGCGAGG	TATGTAGGCG	GTGCTACAGA
	CGGTGACCAT	TGTCCTAATC	GTCTCGCTCC	ATACATCCGC	CACGATGTCT
2351	GTTCTTGAAG	TGGTGGCCTA	ACTACGGCTA	CACTAGAAGA	ACAGTATTTG
	CAAGAACTTC	ACCACCGGAT	TGATGCCGAT	GTGATCTTCT	TGTCATAAAC
2401	GTATCTGCGC	TCTGCTGTAG	CCAGTTACCT	TCGGAAAAAG	AGTTGGTAGC
	CATAGACGCG	AGACGACATC	GGTCAATGGA	AGCCTTTTTC	TCAACCATCG
2451	TCTTGATCCG	GCAAACAAAC	CACCGCTGGT	AGCGGTGGTT	TTTTTGTTTG
	AGAACTAGGC	CGTTTGTTTG	GTGGCGACCA	TCGCCACCAA	AAAAACAAAC
2501	CAAGCAGCAG	ATTACGCGCA	GAAAAAAAGG	ATCTCAAGAA	GATCCTTTGA
	GTTGCTCGTC	TAATGCGCGT	CTTTTTTTTC	TAGAGTTCTT	CTAGGAAACT
2551	TCTTTTCTAC	GGGGTCTGAC	GCTCAGTGGA	ACGAAAACTC	ACGTTAAGGG
	AGAAAAAGATG	CCCCAGACTG	CGAGTCACCT	TGCTTTTGAG	TGCAATTCCC
2601	ATTTTGGTCA	GATCTAGCAC	CAGGCGTTTA	AGGGCACCAA	TAAGTGCCTT
	TAAAACCACT	CTAGATCGTG	GTCCGCAAAT	TCCCGTGGTT	ATTGACGGAA
2651	AAAAAAATTA	CGCCCCGCCC	TGCCACTCAT	CGCAGTACTG	TTGTAATTCA
	TTTTTTTAAT	GCGGGGCGGG	ACGGTGAGTA	GCGTCATGAC	AACATTAAGT
2701	TTAAGCATTC	TGCCGACATG	GAAGCCATCA	CAAACGGCAT	GATGAACCTG
	AATTCGTAAG	ACGGCTGTAC	CTTCGGTAGT	GTTTGCCGTA	CTACTTGAC
2751	AATCGCCAGC	GGCATCAGCA	CCTTGTCGCC	TTGCGTATAA	TATTTGCCCA
	TTAGCGGTCG	CCGTAGTCGT	GGAACAGCGG	AACGCATATT	ATAAACGGGT
2801	TAGTGAAAAAC	GGGGGCGAAG	AAGTTGTCCA	TATTGGCTAC	GTTTAAATCA
	ATCACTTTTG	CCCCCGCTTC	TTCAACAGGT	ATAACCGATG	CAAATTTAGT
2851	AAACTGGTGA	AACTCACCCA	GGGATTGGCT	GAGACGAAAA	ACATATTCTC
	TTTGACCACT	TTGAGTGGGT	CCCTAACCGA	CTCTGCTTTT	TGTATAAGAG

```

2901  AATAAACCCCT TTAGGGAAAT AGGCCAGGTT TTCACCGTAA CACGCCACAT
      TTATTTGGGA AATCCCTTTA TCCGGTCCAA AAGTGGCATT GTGCGGTGTA

2951  CTTGCGAATA TATGTGTAGA AACTGCCGGA AATCGTCGTG GTATTCACTC
      GAACGCTTAT ATACACATCT TTGACGGCCT TTAGCAGCAC CATAAGTGAG

3001  CAGAGCGATG AAAACGTTTC AGTTTGCTCA TGGAAAACGG TGTAAACAAGG
      GTCTCGCTAC TTTTGCAAAG TCAAACGAGT ACCTTTTGCC ACATTGTTCC

3051  GTGAACACTA TCCCATATCA CCAGCTCACC GTCTTTCATT GCCATACGGA
      CACTTGTGAT AGGGTATAGT GGTGAGTGG CAGAAAGTAA CGGTATGCCT

3101  ACTCCGGGTG AGCATTCATC AGGCGGGCAA GAATGTGAAT AAAGGCCGGA
      TGAGGCCAC TCGTAAGTAG TCCGCCGTT CTTACACTTA TTTCCGGCCT

3151  TAAAACTTGT GCTTATTTTT CTTTACGGTC TTTAAAAAGG CCGTAATATC
      ATTTTGAACA CGAATAAAAA GAAATGCCAG AAATTTTCC GGCATTATAG

3201  CAGCTGAACG GTCTGGTTAT AGGTACATTG AGCAACTGAC TGAAATGCCT
      GTCGACTTGC CAGACCAATA TCCATGTAAC TCGTTGACTG ACTTTACGGA

3251  CAAAATGTTT TTTACGATGC CATTGGGATA TATCAACGGT GGTATATCCA
      GTTTTACAAG AAATGCTACG GTAACCCTAT ATAGTTGCCA CCATATAGGT

3301  GTGATTTTTT TCTCCATTTT AGCTTCCTTA GCTCCTGAAA ATCTCGATAA
      CACTAAAAAA AGAGGTAAAA TCGAAGGAAT CGAGGACTTT TAGAGCTATT

3351  CTCAAAAAAT ACGCCCGGTA GTGATCTTAT TTCATTATGG TGAAAGTTGG
      GAGTTTTTTA TGCGGGCCAT CACTAGAATA AAGTAATACC ACTTTCAACC

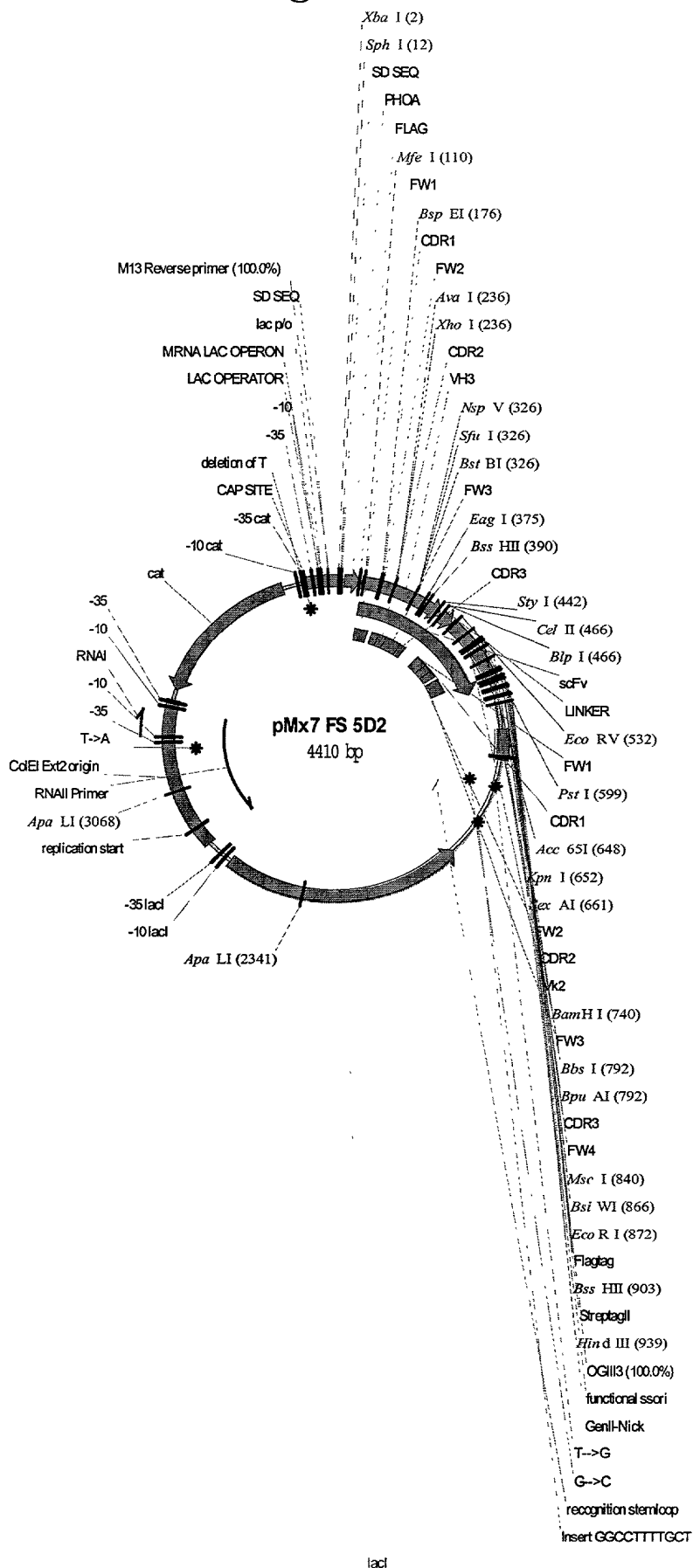
3401  AACCTCACCC GACGTCTAAT GTGAGTTAGC TCACTCATTA GGCACCCCAG
      TTGGAGTGGG CTGCAGATTA CACTCAATCG AGTGAGTAAT CCGTGGGGTC

3451  GCTTTTACACT TTATGCTTCC GGCTCGTATG TTGTGTGGAA TTGTGAGCGG
      CGAAATGTGA AATACGAAGG CCGAGCATAC AACACACCTT AACACTCGCC

      M13 Reverse primer 100.0% XbaI
      =====
3501  ATAACAATTT CACACAGGAA ACAGCTATGA CCATGATTAC GAATTTCT
      TATTGTTAAA GTGTGTCCTT TGTCGATACT GGTACTAATG CTAAAGA

```

# Figure 12



lacI

## Figure 12 (cont)

XbaI SphI

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1 TCTAGAGCAT GCGTAGGAGA AAATAAAATG AAACAAAGCA CTATTGCACT
AGATCTCGTA CGCATCCTCT TTTATTTTAC TTTGTTTCGT GATAACGTGA

51 GGCACCTCTTA CCGTTGCTCT TCACCCCTGT TACCAAAGCC GACTACAAAG
CCGTGAGAAT GGCAACGAGA AGTGGGGACA ATGGTTTCGG CTGATGTTTC

MfeI

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101 ATGAAGTGCA ATTGGTGGA AGCGGCGGCG GCCTGGTGCA ACCGGGCGGC  
TACTTCACGT TAACCACCTT TCGCCGCCGC CGGACCACGT TGGCCCGCCG

BspEI

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151 AGCCTGCGTC TGAGCTGCGC GGCCTCCGGA TTTACCTTTA GCAGCTATGC
TCGGACGCAG ACTCGACGCG CCGGAGGCCT AAATGGAAAT CGTCGATACG

XhoI

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AvaI

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201 GATGAGCTGG GTGCGCCAAG CCCCTGGGAA GGGTCTCGAG TGGGTGAGCG
CTACTCGACC CACGCGGTTC GGGGACCCTT CCCAGAGCTC ACCCACTCGC

251 CGATTAGCGG TAGCGGCGGC AGCACCTATT ATGCGGATAG CGTGAAAGGC
GCTAATCGCC ATCGCCGCCG TCGTGGATAA TACGCCTATC GCACTTTCCG

BstBI

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SfuI

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NspV

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301 CGTTTTACCA TTTCACGTGA TAATTGAAA AACACCCTGT ATCTGCAAAT  
GCAAAATGGT AAAGTGCACCT ATTAAGCTTT TTGTGGGACA TAGACGTTTA

EagI

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BssHII

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351 GAACAGCCTG CGTGCGGAAG ATACGGCCGT GTATTATTGC GCGCGTGTTA  
CTTGTCGGAC GCACGCCTTC TATGCCGGCA CATAATAACG CGCGACAAT

StyI

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401 AGAAGCATTT TTCTCGTAAG AATTGGTTTG ATTATTGGGG CCAAGGCACC
TCTTCGTAAA AAGAGCATTC TTAACCAAAC TAATAACCCC GGTTCGCTGG

BlpI

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CelII

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451 CTGGTGACGG TTAGCTCAGC GGGTGGCGGT TCTGGCGGCG GTGGGAGCGG
GACCACTGCC AATCGAGTCG CCCACCGCCA AGACCGCCGC CACCCTCGCC

EcoRV

~~~~~

501 TGGCGGTGGT TCTGGCGGTG GTGGTTCCGA TATCGTGATG ACCCAGAGCC  
ACCGCCACCA AGACCGCCAC CACCAAGGCT ATAGCACTAC TGGGTCTCGG

PstI

~~~~~

551 CACTGAGCCT GCCAGTGACT CCGGGCGAGC CTGCGAGCAT TAGCTGCAGA
GTGACTCGGA CGGTCACTGA GGCCCGCTCG GACGCTCGTA ATCGACGTCT

KpnI

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Acc65I

~~~~~

601 AGCAGCCAAA GCCTGCTGCA TAGCAACGGC TATAACTATC TGGATTGGTA
TCGTCGGTTT CGGACGACGT ATCGTTGCCG ATATTGATAG ACCTAACCAT

KpnI

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Acc65I

SexAI

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651 CCTTCAAAAA CCAGGTCAAA GCCCGCAGCT ATTAATTTAT CTGGGCAGCA  
GGAAGTTTTT GGTCCAGTTT CGGGCGTCGA TAATTAAATA GACCCGTCGT

BamHI

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701 ACCGTGCCAG TGGGGTCCCG GATCGTTTTA GCGGCTCTGG ATCCGGCACC
TGGCACGGTC ACCCCAGGGC CTAGCAAAAT CGCCGAGACC TAGGCCGTGG

BpuAI

~~~~~

BbsI

~~~~~

751 GATTTTACCC TGAAAATTAG CCGTGTGGAA GCTGAAGACG TGGGCGTGTA
CTAAATGGG ACTTTTAATC GGCACACCTT CGACTTCTGC ACCCGCACAT

MscI

~~~~~

801 TTATTGCCAG CAGCATTATA CCACCCCGCC GACCTTTGGC CAGGGTACGA  
AATAACGGTC GTCGTAATAT GGTGGGGCGG CTGGAAACCG GTCCCATGCT



1501	TAGACTAGTG ATCTGATCAC	TTTAAACCGG AAATTTGGCC	ACCGGGGGGG TGGCCCCCCC	GGCTTAAGTG CCGAATTCAC	GGCTGCAAAA CCGACGTTTT
1551	CAAAACGGCC GTTTTGCCGG	TCCTGTCAGG AGGACAGTCC	AAGCCGCTTT TTCGGCGAAA	TATCGGGTAG ATAGCCCATC	CCTCACTGCC GGAGTGACGG
1601	CGCTTTCCAG GCGAAAGGTC	TCGGGAAACC AGCCCTTTGG	TGTCGTGCCA ACAGCACGGT	GCTGCATCAG CGACGTAGTC	TGAATCGGCC ACTTAGCCGG
1651	AACGCGCGGG TTGCGCGCCC	GAGAGGCGGT CTCTCCGCCA	TTGCGTATTG AACGCATAAC	GGAGCCAGGG CCTCGGTCCC	TGGTTTTTCT ACCAAAAAGA
1701	TTTCACCAGT AAAGTGGTCA	GAGACGGGCA CTCTGCCCCG	ACAGCTGATT TGTCGACTAA	GCCCTTCACC CGGGAAGTGG	GCCTGGCCCT CGGACCGGGA
1751	GAGAGAGTTG CTCTCTCAAC	CAGCAAGCGG GTCGTTTCGC	TCCACGCTGG AGGTGCGACC	TTTGCCCCAG AAACGGGGTC	CAGGCGAAAA GTCCGCTTTT
1801	TCCTGTTTGA AGGACAAACT	TGGTGGTCAG ACCACCAGTC	CGGCGGGATA GCCGCCCTAT	TAACATGAGC ATTGTACTCG	TGTCCTCGGT ACAGGAGCCA
1851	ATCGTCGTAT TAGCAGCATA	CCCACTACCG GGGTGATGGC	AGATGTCCGC TCTACAGGCG	ACCAACGCGC TGGTTGCGCG	AGCCCGGACT TCGGGCCTGA
1901	CGGTAATGGC GCCATTACCG	ACGCATTGCG TGCGTAACGC	CCCAGCGCCA GGGTGCGGGT	TCTGATCGTT AGACTAGCAA	GGCAACCAGC CCGTTGGTCG
1951	ATCGCAGTGG TAGCGTCACC	GAACGATGCC CTTGCTACGG	CTCATTCAGC GAGTAAGTCG	ATTTGCATGG TAAACGTACC	TTTGTGAAA AAACAACTTT
2001	ACCGGACATG TGGCCTGTAC	GCACTCCAGT CGTGAGGTCA	CGCCTTCCCG GCGGAAGGGC	TTCCGCTATC AAGGCGATAG	GGCTGAATTT CCGACTTAAA
2051	GATTGCGAGT CTAACGCTCA	GAGATATTTA CTCTATAAAT	TGCCAGCCAG ACGGTCGGTC	CCAGACGCAG GGTCTGCGTC	ACGCGCCGAG TGCGCGGCTC
2101	ACAGAACTTA TGTCTTGAAT	ATGGGCCAGC TACCCGGTGC	TAACAGCGCG ATTGTCGCGC	ATTTGCTGGT TAAACGACCA	GGCCCAATGC CCGGGTTACG
2151	GACCAGATGC CTGGTCTACG	TCCACGCCCA AGGTGCGGGT	GTCGCGTACC CAGCGCATGG	GTCCTCATGG CAGGAGTACC	GAGAAAATAA CTCTTTTATT
2201	TACTGTTGAT ATGACAACTA	GGGTGTCTGG CCCACAGACC	TCAGAGACAT AGTCTCTGTA	CAAGAAATAA GTTCTTTATT	CGCCGGAACA GCGGCCTTGT
2251	TTAGTGCAGG AATCACGTCC	CAGCTTCCAC GTCGAAGGTG	AGCAATAGCA TCGTTATCGT	TCCTGGTCAT AGGACCAGTA	CCAGCGGATA GGTCGCCTAT
					ApaLI ~~~~~
2301	GTTAATAATC CAATTATTAG	AGCCCACTGA TCGGGTGACT	CACGTTGCGC GTGCAACGCG	GAGAAGATTG CTCTTCTAAC	TGCACCGCCG ACGTGGCGGC
2351	CTTTACAGGC GAAATGTCCG	TTCGACGCCG AAGCTGCGGC	CTTCGTTCTA GAAGCAAGAT	CCATCGACAC GGTAGCTGTG	GACCACGCTG CTGGTGCGAC

2401 GCACCCAGTT GATCGGCGCG AGATTTAATC GCCGCGACAA TTTGCGACGG  
 CGTGGGTCAA CTAGCCGCGC TCTAAATTAG CGGCGCTGTT AAACGCTGCC  
 2451 CGCGTGCAGG GCCAGACTGG AGGTGGCAAC GCCAATCAGC AACGACTGTT  
 GCGCACGTCC CGGTCTGACC TCCACCGTTG CGGTTAGTCG TTGCTGACAA  
 2501 TGCCCGCCAG TTGTTGTGCC ACGCGGTTAG GAATGTAATT CAGCTCCGCC  
 ACGGGCGGTC AACAAACACGG TGCGCCAATC CTTACATTAA GTCGAGGCGG  
 2551 ATCGCCGCTT CCACTTTTTTC CCGCGTTTTTC GCAGAAACGT GGCTGGCCTG  
 TAGCGGCGAA GGTGAAAAAG GGCAGAAAAG CGTCTTTGCA CCGACCGGAC  
 2601 GTTCACCACG CGGGAAACGG TCTGATAAGA GACACCGGCA TACTCTGCGA  
 CAAGTGGTGC GCCCTTTGCC AGACTATTCT CTGTGGCCGT ATGAGACGCT  
 2651 CATCGTATAA CGTTACTGGT TTCACATTCA CCACCCTGAA TTGACTCTCT  
 GTAGCATATT GCAATGACCA AAGTGTAAGT GGTGGGACTT AACTGAGAGA  
 2701 TCCGGGCGCT ATCATGCCAT ACCGCGAAAG GTTTTTCGCC ATTGATGCT  
 AGGCCCCGGA TAGTACGGTA TGGCGCTTTC CAAAACGCGG TAAGCTACGA  
 2751 AGCCATGTGA GCAAAAAGGC AGCAAAAAGGC CAGGAACCGT AAAAAGGCCG  
 TCGGTACACT CGTTTTCCGG TCGTTTTCCG GTCCTTGGCA TTTTTCCGGC  
 2801 CGTTGCTGGC GTTTTTCCAT AGGCTCCGCC CCCCTGACGA GCATCACAAA  
 GCAACGACCG CAAAAGGTA TCCGAGGCGG GGGGACTGCT CGTAGTGTTT  
 2851 AATCGACGCT CAAGTCAGAG GTGGCGAAAC CCGACAGGAC TATAAAGATA  
 TTAGCTGCGA GTTCAGTCTC CACCGCTTTG GGCTGTCTTG ATATTTCTAT  
 2901 CCAGGCGTTT CCCCCTGGAA GCTCCCTCGT GCGCTCTCCT GTTCCGACCC  
 GGTCCGCAAA GGGGGACCTT CGAGGGAGCA CGCGAGAGGA CAAGGCTGGG  
 2951 TGCCGCTTAC CGGATACCTG TCCGCCTTTC TCCCTTCGGG AAGCGTGGCG  
 ACGGCGAATG GCCTATGGAC AGGCGGAAAAG AGGGAAGCCC TTCGCACCGC  
 3001 CTTTCTCATA GCTCACGCTG TAGGTATCTC AGTTCGGTGT AGGTCGTTTCG  
 GAAAGAGTAT CGAGTGCGAC ATCCATAGAG TCAAGCCACA TCCAGCAAGC  
  
 ApaLI  
 ~~~~~  
 3051 CTCCAAGCTG GGCTGTGTGC ACGAACCCCC CGTTCAGCCC GACCGCTGCG
 GAGGTTTCGAC CCGACACACG TGCTTGGGGG GCAAGTCGGG CTGGCGACGC
 3101 CCTTATCCGG TAACTATCGT CTTGAGTCCA ACCCGGTAAG ACACGACTTA
 GGAATAGGCC ATTGATAGCA GAACTCAGGT TGGGCCATTC TGTGCTGAAT
 3151 TCGCCACTGG CAGCAGCCAC TGGTAACAGG ATTAGCAGAG CGAGGTATGT
 AGCGGTGACC GTCGTCGGTG ACCATTGTCC TAATCGTCTC GCTCCATACA
 3201 AGGCGGTGCT ACAGAGTTCT TGAAGTGGTG GCCTAACTAC GGCTACACTA
 TCCGCCACGA TGTCTCAAGA ACTTCACCAC CGGATTGATG CCGATGTGAT
 3251 GAAGAACAGT ATTTGGTATC TGCGCTCTGC TGTAGCCAGT TACCTTCGGA
 CTTCTTGTCA TAAACCATAG ACGCGAGACG ACATCGGTCA ATGGAAGCCT

| | | | | | |
|------|------------|------------|------------|------------|-------------|
| 3301 | AAAAGAGTTG | GTAGCTCTTG | ATCCGGCAAA | CAAACCACCG | CTGGTAGCGG |
| | TTTTCTCAAC | CATCGAGAAC | TAGGCCGTTT | GTTTGGTGGC | GACCATCGCC |
| 3351 | TGGTTTTTTT | GTTTGCAAGC | AGCAGATTAC | GCGCAGAAAA | AAAGGATCTC |
| | ACCAAAAAAA | CAAACGTTTC | TCGTCTAATG | CGCGTCTTTT | TTTCCTAGAG |
| 3401 | AAGAAGATCC | TTTGATCTTT | TCTACGGGGT | CTGACGCTCA | GTGGAACGAA |
| | TTCTTCTAGG | AAACTAGAAA | AGATGCCCCA | GACTGCGAGT | CACCTTGCTT |
| 3451 | AACTCACGTT | AAGGGATTTT | GGTCAGATCT | AGCACCAGGC | GTTTAAGGGC |
| | TTGAGTGCAA | TTCCCTAAAA | CCAGTCTAGA | TCGTGGTCCG | CAAATTCCCG |
| 3501 | ACCAATAACT | GCCTTAAAAA | AATTACGCCC | CGCCCTGCCA | CTCATCGCAG |
| | TGGTTATTGA | CGGAATTTTT | TTAATGCGGG | GCGGGACGGT | GAGTAGCGTC |
| 3551 | TACTGTTGTA | ATTCATTAAG | CATTCTGCCG | ACATGGAAGC | CATCACAAAC |
| | ATGACAACAT | TAAGTAATTC | GTAAGACGGC | TGTACCTTCG | GTAGTGTTTG |
| 3601 | GGCATGATGA | ACCTGAATCG | CCAGCGGCAT | CAGCACCTTG | TCGCCTTGCG |
| | CCGTACTACT | TGGACTTAGC | GGTCGCCGTA | GTCGTGGAAC | AGCGGAACGC |
| 3651 | TATAATATTT | GCCCATAGTG | AAAACGGGGG | CGAAGAAGTT | GTCCATATTG |
| | ATATTATAAA | CGGGTATCAC | TTTTGCCCCC | GCTTCTTCAA | CAGGTATAAC |
| 3701 | GCTACGTTTA | AATCAAAACT | GGTGAAACTC | ACCCAGGGAT | TGGCTGAGAC |
| | CGATGCAAAT | TTAGTTTGA | CCACTTTGAG | TGGGTCCCTA | ACCGACTCTG |
| 3751 | GAAAAACATA | TTCTCAATAA | ACCCTTTAGG | GAAATAGGCC | AGGTTTTTAC |
| | CTTTTGTAT | AAGAGTTATT | TGGGAAATCC | CTTTATCCGG | TCCAAAAGTG |
| 3801 | CGTAACACGC | CACATCTTGC | GAATATATGT | GTAGAAACTG | CCGGAAATCG |
| | GCATTGTGCG | GTGTAGAACG | CTTATATACA | CATCTTTGAC | GGCCTTTAGC |
| 3851 | TCGTGGTATT | CACTCCAGAG | CGATGAAAAC | GTTTCAGTTT | GCTCATGGAA |
| | AGCACCATAA | GTGAGGTCTC | GCTACTTTTG | CAAAGTCAAA | CGAGTACCTT |
| 3901 | AACGGTGTA | CAAGGGTGAA | CACTATCCCA | TATCACCAGC | TCACCGTCTT |
| | TTGCCACATT | GTTCCCACTT | GTGATAGGGT | ATAGTGGTCG | AGTGGCAGAA |
| 3951 | TCATTGCCAT | ACGGAAGTCC | GGGTGAGCAT | TCATCAGGCG | GGCAAGAATG |
| | AGTAACGTA | TGCCTTGAGG | CCCACTCGTA | AGTAGTCCGC | CCGTTCTTAC |
| 4001 | TGAATAAAGG | CCGGATAAAA | CTTGTGCTTA | TTTTTCTTTA | CGGTCTTTAA |
| | ACTTATTTCC | GGCCTATTTT | GAACACGAAT | AAAAAGAAAT | GCCAGAAATT |
| 4051 | AAAGGCCGTA | ATATCCAGCT | GAACGGTCTG | GTTATAGGTA | CATTGAGCAA |
| | TTTCCGGCAT | TATAGGTCGA | CTTGCCAGAC | CAATATCCAT | GTAACCTCGT |
| 4101 | CTGACTGAAA | TGCCTCAAAA | TGTTCTTTAC | GATGCCATTG | GGATATATCA |
| | GACTGACTTT | ACGGAGTTTT | ACAAGAAATG | CTACGGTAAC | CCTATATAGT |
| 4151 | ACGGTGGTAT | ATCCAGTGAT | TTTTTTCTCC | ATTTTAGCTT | CCTTAGCTCC |
| | TGCCACCATA | TAGGTCACTA | AAAAAAGAGG | TAAAATCGAA | GGAATCGAGG |
| 4201 | TGAAAATCTC | GATAACTCAA | AAAATACGCC | CGGTAGTGAT | CTTATTTTCAT |
| | ACTTTTAGAG | CTATTGAGTT | TTTTATGCGG | GCCATCACTA | GAATAAAGTA |

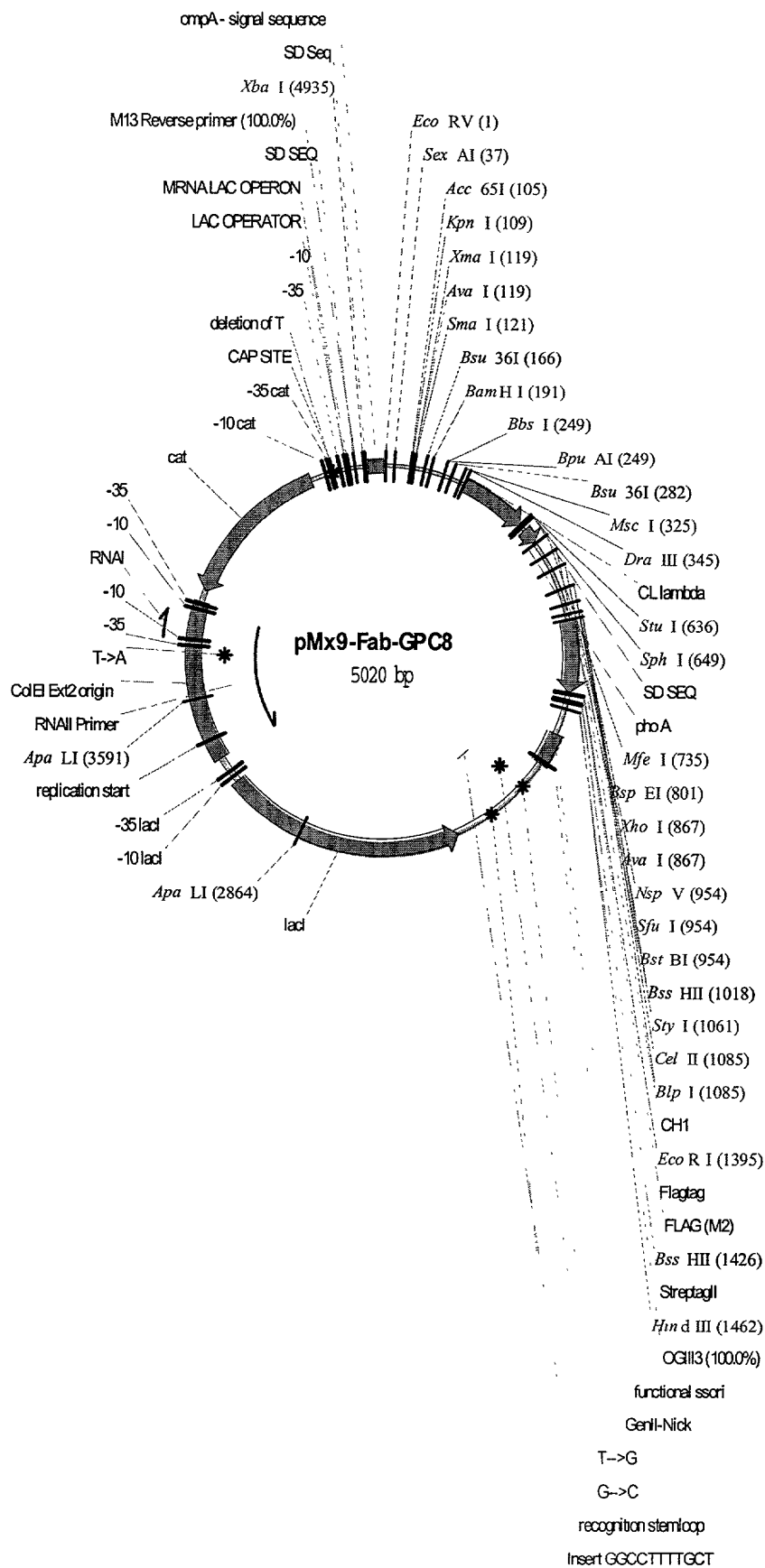
[illegible]

Figure 13 (cont)

| | | | | | |
|-----|------------|------------|------------|------------|-------------|
| | EcoRV | | | | SexAI |
| | ~~~ | | | | ~~~~~ |
| 1 | ATCGTGCTGA | CCCAGCCGCC | TTCAGTGAGT | GGCGCACCAG | GTCAGCGTGT |
| | TAGCACGACT | GGGTCGGCGG | AAGTCACTCA | CCGCGTGGTC | CAGTCGCACA |
| 51 | GACCATCTCG | TGTAGCGGCA | GCAGCAGCAA | CATTGGCAGC | AACTATGTGA |
| | CTGGTAGAGC | ACATCGCCGT | CGTCGTCGTT | GTAACCGTCG | TTGATACTACT |
| | | XmaI | | | |
| | | ~~~~~ | | | |
| | KpnI | SmaI | | | |
| | ~~~~~ | ~~~~~ | | | |
| | Acc65I | AvaI | | | |
| | ~~~~~ | ~~~~~ | | | |
| 101 | GCTGGTACCA | GCAGTTGCCC | GGGACGGCGC | CGAAACTGCT | GATTTATGAT |
| | CGACCATGGT | CGTCAACGGG | CCCTGCCGCG | GCTTTGACGA | CTAAATACTA |
| | | Bsu36I | | BamHI | |
| | | ~~~~~ | | ~~~~~ | |
| 151 | AACAACCAGC | GTCCCTCAGG | CGTGCCGGAT | CGTTTTAGCG | GATCCAAAAG |
| | TTGTTGGTCG | CAGGGAGTCC | GCACGGCCTA | GCAAAATCGC | CTAGGTTTTTC |
| | | | | BpuAI | |
| | | | | ~~~~~ | |
| | | | | BbsI | |
| | | | | ~~~~~ | |
| 201 | CGGCACCAGC | GCGAGCCTTG | CGATTACGGG | CCTGCAAAGC | GAAGACGAAG |
| | GCCGTGGTCG | CGCTCGGAAC | GCTAATGCCC | GGACGTTTCG | CTTCTGCTTC |
| | | Bsu36I | | | |
| | | ~~~~~ | | | |
| 251 | CGGATTATTA | TTGCCAGAGC | TATGACATGC | CTCAGGCTGT | GTTTGGCGGC |
| | GCCTAATAAT | AACGGTCTCG | ATACTGTACG | GAGTCCGACA | CAAACCGCCG |
| | | MscI | | DraIII | |
| | | ~~~~~ | | ~~~~~ | |
| 301 | GGCACGAAGT | TTAACCGTTC | TTGGCCAGCC | GAAAGCCGCA | CCGAGTGTGA |
| | CCGTGCTTCA | AATTGGCAAG | AACCGGTCGG | CTTTCGGCGT | GGCTCACACT |
| 351 | CGCTGTTTCC | GCCGAGCAGC | GAAGAATTGC | AGGCGAACAA | AGCGACCTTG |
| | GCGACAAAGG | CGGCTCGTCG | CTTCTTAACG | TCCGCTTGTT | TCGCTGGGAC |
| 401 | GTGTGCCTGA | TTAGCGACTT | TTATCCGGGA | GCCGTGACAG | TGGCCTGGAA |
| | CACACGGACT | AATCGCTGAA | AATAGGCCCT | CGGCACTGTC | ACCGGACCTT |
| 451 | GGCAGATAGC | AGCCCCGTCA | AGGCGGGAGT | GGAGACCACC | ACACCCTCCA |
| | CCGTCTATCG | TCGGGGCAGT | TCCGCCCTCA | CCTCTGGTGG | TGTGGGAGGT |
| 501 | AACAAAGCAA | CAACAAGTAC | GCGGCCAGCA | GCTATCTGAG | CCTGACGCCT |
| | TTGTTTCGTT | GTTGTTCATG | CGCCGGTCGT | CGATAGACTC | GGACTGCGGA |
| 551 | GAGCAGTGGA | AGTCCCACAG | AAGCTACAGC | TGCCAGGTCA | CGCATGAGGG |
| | CTCGTCACCT | TCAGGGTGTC | TTCGATGTCG | ACGGTCCAGT | GCGTACTCCC |
| | | | StuI | SphI | |

601 GAGCACCGTG GAAAAAACCG TTGCGCCGAC TGAGGCCTGA TAAGCATGCG
CTCGTGGCAC CTTTTTTTGGC AACGCGGCTG ACTCCGGACT ATTCGTACGC

651 TAGGAGAAAA TAAAATGAAA CAAAGCACTA TTGCACTGGC ACTCTTACCG
ATCCTCTTTT ATTTTACTTT GTTTCGTGAT AACGTGACCG TGAGAATGGC

MfeI

701 TTGCTCTTCA CCCCTGTTAC CAAAGCCCAG GTGCAATTGA AAGAAAGCGG
AACGAGAAGT GGGGACAATG GTTTCGGGTC CACGTAACT TTCTTTTCGCC

BspEI

751 CCCGGCCCTG GTGAAACCGA CCCAAACCCT GACCCTGACC TGTACCTTTT
GGGCCGGGAC CACTTTGGCT GGGTTTGGGA CTGGGACTGG ACATGGAAAA

BspEI

801 CCGGATTTAG CCTGTCCACG TCTGGCGTTG GCGTGGGCTG GATTGCGCCAG
GGCCTAAATC GGACAGGTGC AGACCGCAAC CGCACCCGAC CTAAGCGGTC

XhoI

~~~~~

AvaI

~~~~~

851 CCGCCTGGGA AAGCCCTCGA GTGGCTGGCT CTGATTGATT GGGATGATGA
GGCGGACCCT TTCGGGAGCT CACCGACCGA GACTAACTAA CCCTACTACT

901 TAAGTATTAT AGCACCAGCC TGAAAACGCG TCTGACCATT AGCAAAGATA
ATTCATAATA TCGTGGTCGG ACTTTTGCGC AGACTGGTAA TCGTTTCTAT

BstBI

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SfuI

~~~~~

NspV

~~~~~

951 CTTGCAAAAA TCAGGTGGTG CTGACTATGA CCAACATGGA CCCGGTGGAT  
GAAGCTTTTT AGTCCACCAC GACTGATACT GGTGTACCT GGGCCACCTA

BssHII

~~~~~

1001 ACGGCCACCT ATTATTGCGC GCGTTCTCCT CGTTATCGTG GTGCTTTTGA
TGCCGGTGGA TAATAACGCG CGCAAGAGGA GCAATAGCAC CACGAAAAC

BlpI

~~~~~

StyI

~~~~~

CelII

~~~~~

1051 TTATTGGGGC CAAGGCACCC TGGTGACGGT TAGCTCAGCG TCGACCAAAG  
AATAACCCCG GTTCCGTGGG ACCACTGCCA ATCGAGTCGC AGCTGGTTTC

1101 GTCCAAGCGT GTTTCGCTG GCTCCGAGCA GCAAAAGCAC CAGCGGCGGC  
CAGGTTCGCA CAAAGGCGAC CGAGGCTCGT CGTTTTTCGTG GTCGCCGCCG

1151 ACGGCTGCCC TGGGCTGCCT GGTAAAGAT TATTTCCCGG AACCAGTCAC

```

      TGCCGACGGG ACCCGACGGA CCAATTTCTA ATAAAGGGCC TTGGTCAGTG

1201  CGTGAGCTGG AACAGCGGGG CGCTGACCAG CGGCGTGCAT ACCTTTCCGG
      GCACTCGACC TTGTCGCCCC GCGACTGGTC GCCGCACGTA TGGAAAGGCC

1251  CGGTGCTGCA AAGCAGCGGC CTGTATAGCC TGAGCAGCGT TGTGACCGTG
      GCCACGACGT TTCGTCGCCG GACATATCGG ACTCGTCGCA AACTGGCAC

1301  CCGAGCAGCA GCTTAGGCAC TCAGACCTAT ATTTGCAACG TGAACCATAA
      GGCTCGTCGT CGAATCCGTG AGTCTGGATA TAAACGTTGC ACTTGGTATT

                                           EcoRI
                                           ~~~~~~

1351 ACCGAGCAAC ACCAAAGTGG ATAAAAAAGT GGAACCGAAA AGCGAATTCTG
 TGGCTCGTTG TGGTTTCACC TATTTTTTCA CTTGGCTTT TCGCTTAAGC

 BssHII
                                           ~~~~~~

1401  ACTATAAAGA TGACGATGAC AAAGGCGCGC CGTGGAGCCA CCCGCAGTTT
      TGATATTTCT ACTGCTACTG TTTCCGCGCG GCACCTCGGT GGGCGTCAAA

      HindIII
      ~~~~~~

1451 GAAAAATGAT AAGCTTGACC TGTGAAGTGA AAAATGGCGC AGATTGTGCG
 CTTTTTACTA TTCGAACTGG ACACTTCACT TTTTACCGCG TCTAACACGC
 OGI113 100.0%
 =====

1501 ACATTTTTTTT TGTCTGCCGT TTAATTAAAG GGGGGGGGGG GCCGGCCTGG
 TGTAAAAAAA ACAGACGGCA AATTAATTTC CCCCCCCCCC CGGCCGGACC

1551 GGGGGGGTGT ACATGAAATT GTAAACGTTA ATATTTTGTT AAAATTCGCG
 CCCCCCACA TGTACTTTAA CATTTGCAAT TATAAAACAA TTTTAAGCGC

1601 TTAAATTTTTT GTTAAATCAG CTCATTTTTT AACCAATAGG CCGAAATCGG
 AATTTAAAAA CAATTTAGTC GAGTAAAAAA TTGGTTATCC GGCTTTAGCC

1651 CAAAATCCCT TATAAATCAA AAGAATAGAC CGAGATAGGG TTGAGTGTTG
 GTTTTAGGGA ATATTTAGTT TTCTTATCTG GCTCTATCCC AACTCACAAC

1701 TTCCAGTTTG GAACAAGAGT CCACTATTAA AGAACGTGGA CTCCAACGTC
 AAGGTCAAAC CTTGTTCTCA GGTGATAATT TCTTGACCT GAGGTTGCAG

1751 AAAGGGCGAA AAACCGTCTA TCAGGGCGAT GGCCCACTAC GAGAACCATC
 TTTCCCCTT TTTGGCAGAT AGTCCCCTA CCGGGTGATG CTCTTGGTAG

1801 ACCCTAATCA AGTTTTTTTGG GGTGAGGTG CCGTAAAGCA CTAAATCGGA
 TGGGATTAGT TCAAAAACC CCAGCTCCAC GGCATTTCTG GATTTAGCCT

1851 ACCCTAAAGG GAGCCCCCGA TTTAGAGCTT GACGGGGAAA GCCGGCGAAC
 TGGGATTTCC CTCGGGGGCT AAATCTCGAA CTGCCCCTTT CGGCCGCTTG

1901 GTGGCGAGAA AGGAAGGGAA GAAAGCGAAA GGAGCGGGCG CTAGGGCGCT
 CACCGCTCTT TCCTTCCCTT CTTTCGCTTT CCTCGCCCGC GATCCCGCGA

1951 GGCAAGTGTA GCGGTCACGC TGCGCGTAAC CACCACACCC GCCGCGCTTA
 CCGTTCACAT CGCCAGTGCG ACGCGCATTG GTGGTGTGGG CGGCGCGAAT

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2001 ATGCGCCGCT ACAGGGCGCG TGCTAGACTA GTGTTTAAAC CGGACCGGGG  
TACGCGGCGA TGTCCCGCGC ACGATCTGAT CACAAATTG GCCTGGCCCC

2051 GGGGGCTTAA GTGGGCTGCA AAACAAAACG GCCTCCTGTC AGGAAGCCGC  
CCCCGAATT CACCCGACGT TTTGTTTTCG CGGAGGACAG TCCTTCGGCG

2101 TTTTATCGGG TAGCCTCACT GCCCGCTTTC CAGTCGGGAA ACCTGTCGTG  
AAAATAGCCC ATCGGAGTGA CGGGCGAAAG GTCAGCCCTT TGGACAGCAC

2151 CCAGCTGCAT CAGTGAATCG GCCAACGCGC GGGGAGAGGC GGTTTGCGTA  
GGTCGACGTA GTCACCTAGC CGGTTGCGCG CCCCTCTCCG CCAAACGCAT

2201 TTGGGAGCCA GGGTGGTTTT TCTTTTCACC AGTGAGACGG GCAACAGCTG  
AACCTTCGGT CCCACCAAAA AGAAAAGTGG TCACTCTGCC CGTTGTCGAC

2251 ATTGCCCTTC ACCGCCTGGC CCTGAGAGAG TTGCAGCAAG CGGTCCACGC  
TAACGGGAAG TGGCGGACCG GGACTCTCTC AACGTCGTTC GCCAGGTGCG

2301 TGGTTTGCCC CAGCAGGCGA AAATCCTGTT TGATGGTGGT CAGCGGCGGG  
ACCAAACGGG GTCGTCCGCT TTTAGGACAA ACTACCACCA GTCGCCGCCC

2351 ATATAACATG AGCTGTCCCT GGTATCGTCG TATCCCACTA CCGAGATGTC  
TATATTGTAC TCGACAGGAG CCATAGCAGC ATAGGGTGAT GGCTCTACAG

2401 CGCACCAACG CGCAGCCCCG ACTCGGTAAT GGCACGCATT GCGCCCAGCG  
GCGTGGTTGC GCGTCGGGCC TGAGCCATTA CCGTGCGTAA CGCGGGTCGC

2451 CCATCTGATC GTTGGCAACC AGCATCGCAG TGGGAACGAT GCCCTCATTC  
GGTAGACTAG CAACCGTTGG TCGTAGCGTC ACCCTTGCTA CGGGAGTAAG

2501 AGCATTTGCA TGGTTTGTG AAAACCGGAC ATGGCACTCC AGTCGCCTTC  
TCGTAAACGT ACCAAACAAC TTTTGGCCTG TACCGTGAGG TCAGCGGAAG

2551 CCGTTCCGCT ATCGGCTGAA TTTGATTGCG AGTGAGATAT TTATGCCAGC  
GGCAAGGCGA TAGCCGACTT AACTAACGC TCACTCTATA AATACGGTCG

2601 CAGCCAGACG CAGACGCGCC GAGACAGAAC TTAATGGGCC AGCTAACAGC  
GTCGGTCTGC GTCTGCGCGG CTCTGTCTTG AATTACCCCG TCGATTGTCT

2651 GCGATTTGCT GGTGGCCCAA TGCGACCAGA TGCTCCACGC CCAGTCGCGT  
CGCTAAACGA CCACCGGGT ACGCTGGTCT ACGAGGTGCG GGTGAGCGCA

2701 ACCGTCCTCA TGGGAGAAAA TAATACTGTT GATGGGTGTC TGGTCAGAGA  
TGGCAGGAGT ACCCTCTTTT ATTATGACAA CTACCCACAG ACCAGTCTCT

2751 CATCAAGAAA TAACGCCGGA ACATTAGTGC AGGCAGCTTC CACAGCAATA  
GTAGTTCTTT ATTGCGGCCT TGTAATCACG TCCGTCGAAG GTGTCGTTAT

2801 GCATCCTGGT CATCCAGCGG ATAGTTAATA ATCAGCCCAC TGACACGTTG  
CGTAGGACCA GTAGGTCGCC TATCAATTAT TAGTCGGGTG ACTGTGCAAC

ApaLI

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2851 CGCGAGAAGA TTGTGCACCG CCGCTTTACA GGCTTCGACG CCGCTTCGTT  
GCGCTCTTCT AACACGTGGC GCGGAAATGT CCGAAGCTGC GCGAAGCAA

|      |                           |                           |                          |                           |                          |
|------|---------------------------|---------------------------|--------------------------|---------------------------|--------------------------|
| 2901 | CTACCATCGA<br>GATGGTAGCT  | CACGACCACG<br>GTGCTGGTGC  | CTGGCACCCA<br>GACCGTGGGT | GTTGATCGGC<br>CAACTAGCCG  | GCGAGATTTA<br>CGCTCTAAAT |
| 2951 | ATCGCCGCGA<br>TAGCGGCGCT  | CAATTTGCGA<br>GTTAAACGCT  | CGGCGCGTGC<br>GCCGCGCACG | AGGGCCAGAC<br>TCCCGGTCTG  | TGGAGGTGGC<br>ACCTCCACCG |
| 3001 | AACGCCAATC<br>TTGCGGTTAG  | AGCAACGACT<br>TCGTTGCTGA  | GTTTGCCCCG<br>CAAACGGGCG | CAGTTGTTGT<br>GTCAACAACA  | GCCACGCGGT<br>CGGTGCGCCA |
| 3051 | TAGGAATGTA<br>ATCCTTACAT  | ATTCAGCTCC<br>TAAGTCGAGG  | GCCATCGCCG<br>CGGTAGCGGC | CTTCCACTTT<br>GAAGGTGAAA  | TTCCCGCGTT<br>AAGGGCGCAA |
| 3101 | TTCGCAGAAA<br>AAGCGTCTTT  | CGTGGCTGGC<br>GCACCGACCG  | CTGGTTCACC<br>GACCAAGTGG | ACGCGGGAAA<br>TGCGCCCTTT  | CGGTCTGATA<br>GCCAGACTAT |
| 3151 | AGAGACACCG<br>TCTCTGTGGC  | GCATACTCTG<br>CGTATGAGAC  | CGACATCGTA<br>GCTGTAGCAT | TAACGTTACT<br>ATTGCAATGA  | GGTTTCACAT<br>CCAAAGTGTA |
| 3201 | TCACCACCCT<br>AGTGGTGGGA  | GAATTGACTC<br>CTTAACTGAG  | TCTTCCGGGC<br>AGAAGGCCCG | GCTATCATGC<br>CGATAGTACG  | CATACCGCGA<br>GTATGGCGCT |
| 3251 | AAGGTTTTTG<br>TTCCAAAACG  | GCCATTCGAT<br>CGGTAAGCTA  | GCTAGCCATG<br>CGATCGGTAC | TGAGCAAAAAG<br>ACTCGTTTTT | GCCAGCAAAA<br>CGGTGTTTTT |
| 3301 | GGCCAGGAAC<br>CCGGTCCTTG  | CGTAAAAAGG<br>GCATTTTTTC  | CCGCGTTGCT<br>GGCGCAACGA | GGCGTTTTTC<br>CCGCAAAAAG  | CATAGGCTCC<br>GTATCCGAGG |
| 3351 | GCCCCCCTGA<br>CGGGGGGACT  | CGAGCATCAC<br>GCTCGTAGTG  | AAAAATCGAC<br>TTTTTAGCTG | GCTCAAGTCA<br>CGAGTTCAGT  | GAGGTGGCGA<br>CTCCACCGCT |
| 3401 | AACCCGACAG<br>TTGGGCTGTC  | GA CTATAAAG<br>CTGATATTTT | ATACCAGGCG<br>TATGGTCCGC | TTTCCCCCTG<br>AAAGGGGGAC  | GAAGCTCCCT<br>CTTCGAGGGA |
| 3451 | CGTGCGCTCT<br>GCACGCGAGA  | CCTGTTCCGA<br>GGACAAGGCT  | CCCTGCCGCT<br>GGGACGGCGA | TACCGGATAC<br>ATGGCCTATG  | CTGTCCGCCT<br>GACAGGCGGA |
| 3501 | TTCTCCCTTC<br>AAGAGGGAAG  | GGGAAGCGTG<br>CCCTTCGCAC  | GCGCTTTCTC<br>CGCGAAAGAG | ATAGCTCACG<br>TATCGAGTGC  | CTGTAGGTAT<br>GACATCCATA |
|      |                           |                           |                          |                           | ApaLI<br>~~~~~           |
| 3551 | CTCAGTTCGG<br>GAGTCAAGCC  | TGTAGGTCGT<br>ACATCCAGCA  | TCGCTCCAAG<br>AGCGAGGTTT | CTGGGCTGTG<br>GACCCGACAC  | TGCACGAACC<br>ACGTGCTTGG |
| 3601 | CCCCGTTTCT<br>GGGGCAAGTC  | CCCAGCCGCT<br>GGGCTGGCGA  | GCGCCTTATC<br>CGCGGAATAG | CGGTAAGTAT<br>GCCATTGATA  | CGTCTTGAGT<br>GCAGAACTCA |
| 3651 | CCAACCCGGT<br>GGTTGGGCCA  | AAGACACGAC<br>TTCTGTGCTG  | TTATCGCCAC<br>AATAGCGGTG | TGGCAGCAGC<br>ACCGTCGTCT  | CACTGGTAAC<br>GTGACCATTG |
| 3701 | AGGATTAGCA<br>TCCTAATCGT  | GAGCGAGGTA<br>CTCGCTCCAT  | TGTAGGCGGT<br>ACATCCGCCA | GCTACAGAGT<br>CGATGTCTCA  | TCTTGAAGTG<br>AGAAGTTTCA |
| 3751 | GTGGCCTAAC<br>CACC GGATTG | TACGGCTACA<br>ATGCCGATGT  | CTAGAAGAAC<br>GATCTTCTTG | AGTATTTGGT<br>TCATAAACCA  | ATCTGCGCTC<br>TAGACGCGAG |
| 3801 | TGCTGTAGCC                | AGTTACCTTC                | GGAAAAAGAG               | TTGGTAGCTC                | TTGATCCGGC               |



CGGGCCATCA CTAGAATAAA GTAATACCAC TTTCAACCTT GGAGTGGGCT

4801 CGTCTAATGT GAGTTAGCTC ACTCATTAGG CACCCCAGGC TTTACACTTT  
GCAGATTACA CTCAATCGAG TGAGTAATCC GTGGGGTCCG AAATGTGAAA

4851 ATGCTTCCGG CTCGTATGTT GTGTGGAATT GTGAGCGGAT AACAAATTTCA  
TACGAAGGCC GAGCATACAA CACACCTTAA CACTCGCCTA TTGTTAAAGT

M13 Reverse primer 100.0% XbaI

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4901 CACAGGAAAC AGCTATGACC ATGATTACGA ATTTCTAGAT AACGAGGGCA  
GTGTCCTTTG TCGATACTGG TACTAATGCT TAAAGATCTA TTGCTCCCGT

4951 AAAAATGAAA AAGACAGCTA TCGCGATTGC AGTGGCACTG GCTGGTTTCG  
TTTTTACTTT TTCTGTCGAT AGCGCTAACG TCACCGTGAC CGACCAAAGC

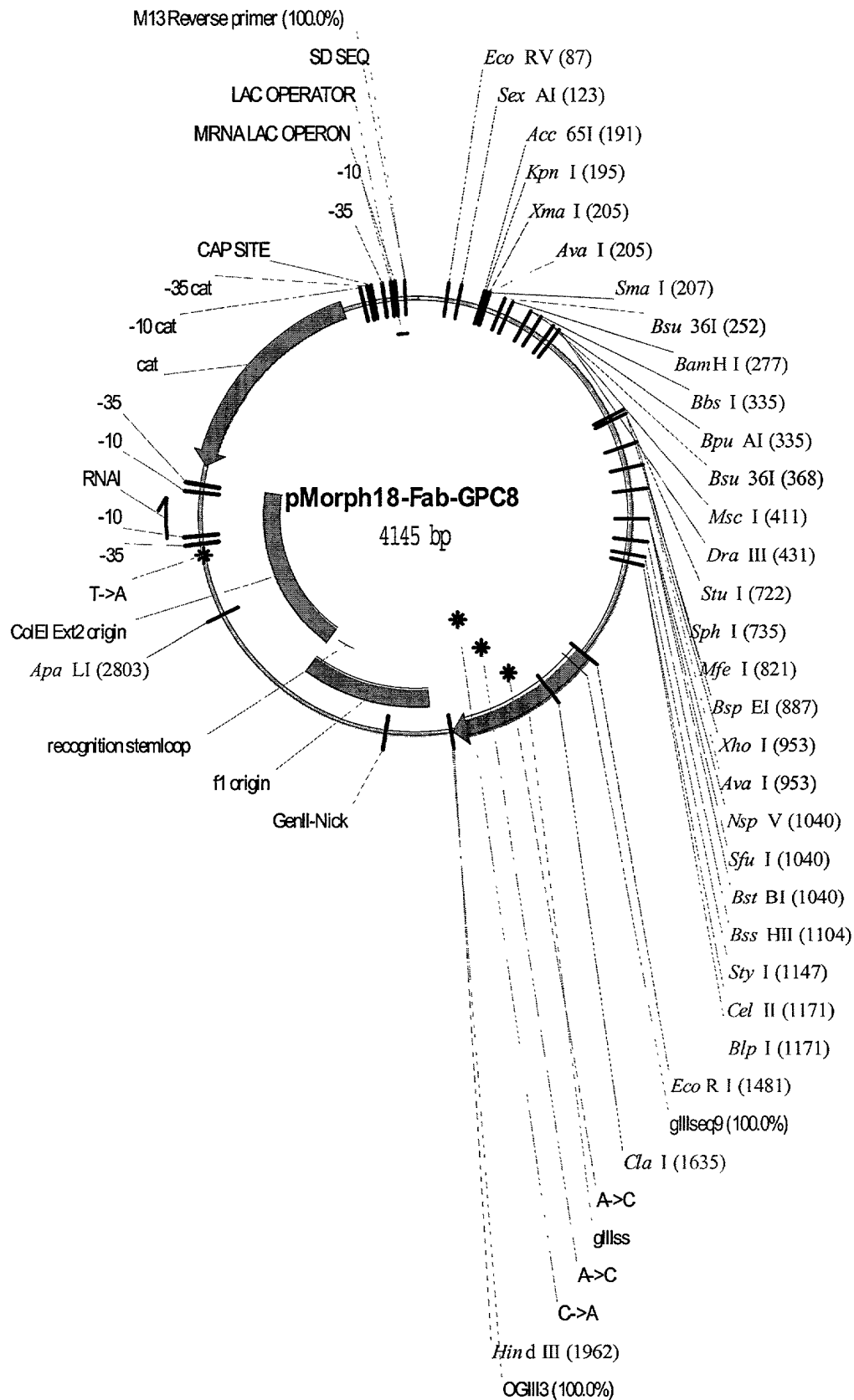
EcoRV

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5001 CTACCGTAGC GCAGGCCGAT  
GATGGCATCG CGTCCGGCTA

4661001-4661001

# Figure 14



## Figure 14 (cont)

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1 TCAGATAACG AGGGCAAAAA ATGAAAAAGA CAGCTATCGC GATTGCAGTG
 AGTCTATTGC TCCCGTTTTT TACTTTTTCT GTCGATAGCG CTAACGTCAC

 EcoRV
                                     ~~~~~~
51  GCACTGGCTG GTTTCGCTAC CGTAGCGCAG GCCGATATCG TGCTGACCCA
   CGTGACCGAC CAAAGCGATG GCATCGCGTC CGGCTATAGC ACGACTGGGT

                                     SexAI
                                     ~~~~~~
101 GCCGCCTTCA GTGAGTGGCG CACCAGGTCA GCGTGTGACC ATCTCGTGTA
 CGGCGGAAGT CACTCACCGC GTGGTCCAGT CGCACACTGG TAGAGCACAT

 KpnI
                                     ~~~~~~
                                     Acc65I
                                     ~~~~~~
151 GCGGCAGCAG CAGCAACATT GGCAGCAACT ATGTGAGCTG GTACCAGCAG
 CGCCGTCGTC GTCGTTGTAA CCGTCGTTGA TACACTCGAC CATGGTCGTC

 XmaI
   ~~~~~~
   SmaI
   ~~~~~~
 AvaI
   ~~~~~~
                                     Bsu36I
                                     ~~~~~~
201 TTGCCCCGGA CGGCGCCGAA ACTGCTGATT TATGATAACA ACCAGCGTCC
 AACGGGCCCT GCCGCGGCTT TGACGACTAA ATACTATTGT TGGTCGCAGG

 Bsu36I
   ~~~~~~
                                     BamHI
                                     ~~~~~~
251 CTCAGGCGTG CCGGATCGTT TTAGCGGATC CAAAAGCGGC ACCAGCGCGA
 GAGTCCGCAC GGCCTAGCAA AATCGCCTAG GTTTTCGCCG TGGTCGCGCT

 BpuAI
                                     ~~~~~~
                                     BbsI
                                     ~~~~~~
301 GCCTTGCGAT TACGGGCCTG CAAAGCGAAG ACGAAGCGGA TTATTATTGC
 CGGAACGCTA ATGCCCCGAC GTTTCGCTTC TGCTTCGCCT AATAATAACG

 Bsu36I
                                     ~~~~~~
351 CAGAGCTATG ACATGCCTCA GGCTGTGTTT GGCGGCGGCA CGAAGTTTAA
   GTCTCGATAC TGTACGGAGT CCGACACAAA CCGCCGCCGT GCTTCAAATT

   MscI
   ~~~~~~
 DraIII
                                     ~~~~~~
401 CCGTTCTTGG CCAGCCGAAA GCCGCACCGA GTGTGACGCT GTTTCGCCCG
   GGCAAGAACC GGTCTGGCTTT CGGCGTGGCT CACACTGCGA CAAAGGCGGC

451 AGCAGCGAAG AATTGCAGGC GAACAAAGCG ACCCTGGTGT GCCTGATTAG
   TCGTCGCTTC TTAACGTCCG CTTGTTTCGC TGGGACCACA CGGACTAATC

501 CCACTTTTAT CCGGGAGCCG TGACAGTGGC CTGGAAGGCA GATAGCAGCC

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GCTGAAAATA GGCCCTCGGC ACTGTCACCG GACCTTCCGT CTATCGTCGG

551 CCGTCAAGGC GGGAGTGGAG ACCACCACAC CCTCCAAACA AAGCAACAAC  
GGCAGTTCCG CCCTCACCTC TGGTGGTGTG GGAGGTTTGT TTCGTTGTTG

601 AAGTACGCGG CCAGCAGCTA TCTGAGCCTG ACGCCTGAGC AGTGGAAGTC  
TTCATGCGCC GGTTCGTCGAT AGACTCGGAC TCGGGAACCG TCACCTTCAG

651 CCACAGAAGC TACAGCTGCC AGGTCACGCA TGAGGGGAGC ACCGTGGAAA  
GGTGTCTTCG ATGTCGACGG TCCAGTGCGT ACTCCCCTCG TGGCACCTTT

StuI SphI  
~~~~~

701 AAACCGTTGC GCCGACTGAG GCCTGATAAG CATGCGTAGG AGAAAATAAA
TTTGGCAACG CGGCTGACTC CGGACTATTC GTACGCATCC TCTTTTATTT

751 ATGAAACAAA GCACTATTGC ACTGGCACTC TTACCGTTGC TCTTCACCCC
TACTTTGTTT CGTGATAACG TGACCGTGAG AATGGCAACG AGAAGTGGGG

MfeI
~~~~~

801 TGTTACCAAA GCCCAGGTGC AATTGAAAGA AAGCGGCCCG GCCCTGGTGA  
ACAATGGTTT CGGGTCCACG TTAACCTTCT TTCGCCGGGC CGGGACCACT

BspEI  
~~~~~

851 AACCGACCCA AACCTGACC CTGACCTGTA CCTTTTCCGG ATTTAGCCTG
TTGGCTGGGT TTGGGACTGG GACTGGACAT GGAAAAGGCC TAAATCGGAC

901 TCCACGTCTG GCGTTGGCGT GGGCTGGATT CGCCAGCCGC CTGGGAAAGC
AGGTGCAGAC CGCAACCGCA CCCGACCTAA GCGGTCGGCG GACCCTTTCG

XhoI
~~~~~

AvaI  
~~~~~

951 CCTCGAGTGG CTGGCTCTGA TTGATTGGGA TGATGATAAG TATTATAGCA
GGAGCTCACC GACCGAGACT AACTAACCTT ACTACTATTC ATAATATCGT

BstBI
~~~~~

SfuI  
~~~~~

NspV
~~~~~

1001 CCAGCCTGAA AACGCGTCTG ACCATTAGCA AAGATACTTC GAAAAATCAG  
GGTCGGACTT TTGCGCAGAC TGGTAATCGT TTCTATGAAG CTTTTTAGTC

1051 GTGGTGCTGA CTATGACCAA CATGGACCCG GTGGATACGG CCACCTATTA  
CACCACGACT GATACTGGTT GTACCTGGGC CACCTATGCC GGTGGATAAT

BssHII StyI  
~~~~~

1101 TTGCGCGCGT TCTCCTCGTT ATCGTGGTGC TTTTGATTAT TGGGGCCAAG
AACGCGCGCA AGAGGAGCAA TAGCACCACG AAAACTAATA ACCCCGGTTC

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Styl

Cell III

2

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| | | | | | |
|------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
| 1151 | GCACCCTGGT
CGTGGGACCA | GACGGTTAGC
CTGCCAATCG | TCAGCGTCGA
AGTCGCAGCT | CCAAAGGTCC
GGTTTCCAGG | AAGCGTGTTT
TTCGCACAAA |
| 1201 | CCGCTGGCTC
GGCGACCGAG | CGAGCAGCAA
GCTCGTCGTT | AAGCACCAGC
TTCGTGGTCG | GGCGGCACGG
CCGCCGTGCC | CTGCCCTGGG
GACGGGACCC |
| 1251 | CTGCCTGGTT
GACGGACCAA | AAAGATTATT
TTTCTAATAA | TCCCGGAACC
AGGGCCTTGG | AGTCACCGTG
TCAGTGGCAC | AGCTGGAACA
TCGACCTTGT |
| 1301 | GCGGGGCGCT
CGCCCCGCGA | GACCAGCGGC
CTGGTCGCCG | GTGCATACCT
CACGTATGGA | TTCCGGCGGT
AAGGCCGCCA | GCTGCAAAGC
CGACGTTTCG |
| 1351 | AGCGGCCTGT
TCGCCGGACA | ATAGCCTGAG
TATCGGACTC | CAGCGTTGTG
GTCGCAACAC | ACCGTGCCGA
TGGCACGGCT | GCAGCAGCTT
CGTCGTCGAA |
| 1401 | AGGCACTCAG
TCCGTGAGTC | ACCTATATTT
TGGATATAAA | GCAACGTGAA
CGTTGCACTT | CCATAAACCG
GGTATTTGGC | AGCAACACCA
TCGTTGTGGT |

EcoRI

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|      |            |            |            |            |            |
|------|------------|------------|------------|------------|------------|
| 1451 | AAGTGGATAA | AAAAGTGGAA | CCGAAAAGCG | AATTCGGGGG | AGGGAGCGGG |
|      | TTCACCTATT | TTTTACCTT  | GGCTTTTCGC | TTAAGCCCCC | TCCCTCGCCC |
| 1501 | AGCGGTGATT | TTGATTATGA | AAAGATGGCA | AACGCTAATA | AGGGGGCTAT |
|      | TCGCCACTAA | AACTAATACT | TTTCTACCGT | TTGCGATTAT | TCCCCCGATA |

gIIIseq9 100.0%

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1551 GACCGAAAT GCCGATGAA ACGCGCTACA GTCTGACGCT AAAGGCAAAC  
CTGGCTTTTA CGGCTACTTT TGC GCGATGT CAGACTGCGA TTTCCGTTTG

ClaT

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|      |                           |                          |                          |                          |                          |
|------|---------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
| 1601 | TTGATTCTGT<br>AACTAAGACA  | CGCTACTGAT<br>GCGATGACTA | TACGGTGCTG<br>ATGCCACGAC | CTATCGATGG<br>GATAGCTACC | TTTCATTGGT<br>AAAGTAACCA |
| 1651 | GACGTTTCCG<br>CTGCAAAGGC  | GCCTTGCTAA<br>CGGAACGATT | TGGTAATGGT<br>ACCATTACCA | GCTACTGGTG<br>CGATGACCAC | ATTTTGCTGG<br>TAAAACGACC |
| 1701 | CTCTAATTCC<br>GAGATTAAGG  | CAAATGGCTC<br>GTTTACCGAG | AAGTCGGTGA<br>TTCAGCCACT | CGGTGATAAT<br>GCCACTATTA | TCACCTTTAA<br>AGTGGAAATT |
| 1751 | TGAATAATTT<br>ACTTATTAAA  | CCGTCAATAT<br>GGCAGTTATA | TTACCTTCCC<br>AATGGAAGGG | TCCCTCAATC<br>AGGGAGTTAG | GGTGGAATGT<br>CCAACTTACA |
| 1801 | CGCCCTTTTG<br>GCGGGA AAAC | TCTTTGGCGC<br>AGAAACCGCG | TGGTAAACCA<br>ACCATTTGGT | TATGAATTTT<br>ATACTTAAAA | CTATTGATTG<br>GATAACTAAC |
| 1851 | TGACAAAATA<br>ACTGTTTTAT  | AACTTATTCC<br>TTGAATAAGG | GTGGTGCTTT<br>CACCACAGAA | TGCGTTTCTT<br>ACGCAAAGAA | TTATATGTTG<br>AATATACAAC |
| 1901 | CCACCTTTAT<br>GGTGGAAATA  | GTATGTATTT<br>CATACATAAA | TCTACGTTTG<br>AGATGCAAAC | CTAACATACT<br>GATTGTATGA | GCGTAATAAG<br>CGCATTATTC |

## HindIII

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1951 GAGTCTTGAT AAGCTTGACC TGTGAAGTGA AAAATGGCGC AGATTGTGCG
 CTCAGAACTA TTCGAACTGG ACACTTCACT TTTTACCGCG TCTAACACGC
 OGIII3 100.0%

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2001 ACATTTTTTT TGTCTGCCGT TTAATGAAAT TGTAAACGTT AATATTTTGT
 TGTAAAAAAA ACAGACGGCA AATTACTTTA ACATTTGCAA TTATAAAACA

2051 TAAAATTCGC GTTAAATTTT TGTTAAATCA GTCATTTTTT TAACCAATAG
 ATTTTAAGCG CAATTTAAAA ACAATTTAGT CGAGTAAAAA ATTGGTTATC

2101 GCCGAAATCG GCAAAATCCC TTATAAATCA AAAGAATAGA CCGAGATAGG
 CGGCTTTAGC CGTTTTAGGG AATATTTAGT TTTCTTATCT GGCTCTATCC

2151 GTTGAGTGTT GTTCCAGTTT GGAACAAGAG TCCACTATTA AGAACGTGG
 CAACTACAA CAAGGTCAAA CCTTGTTCTC AGGTGATAAT TTCTTGACC

2201 ACTCCAACGT CAAAGGGCGA AAAACCGTCT ATCAGGGCGA TGGCCCACTA
 TGAGGTTGCA GTTTCCCGCT TTTTGGCAGA TAGTCCCGCT ACCGGGTGAT

2251 CGAGAACCAT CACCCTAATC AAGTTTTTTG GGGTCGAGGT GCCGTAAAGC
 GCTCTTGTA GTGGGATTAG TTCAAAAAAC CCCAGCTCCA CGGCATTTTCG

2301 ACTAAATCGG AACCTAAAG GGAGCCCCCG ATTTAGAGCT TGACGGGGAA
 TGATTTAGCC TTGGGATTTC CCTCGGGGCG TAAATCTCGA ACTGCCCCCT

2351 AGCCGGCGAA CGTGGCGAGA AAGGAAGGGA AGAAAGCGAA AGGAGCGGGC
 TCGGCCGCTT GCACCGCTCT TTCCTTCCCT TCTTTGCTT TCCTCGCCCG

2401 GCTAGGGCGC TGGCAAGTGT AGCGGTCACG CTGCGCGTAA CCACCACACC
 CGATCCCGCG ACCGTTTACA TCGCCAGTGC GACGCGCATT GGTGGTGTGG

2451 CGCCGCGCTT AATGCGCCGC TACAGGGCGC GTGCTAGCCA TGTGAGCAAA
 GCGGCGCGAA TTACGCGGCG ATGTCCCGCG CACGATCGGT AACTCGTTTT

2501 AGGCCAGCAA AAGGCCAGGA ACCGTAAAAA GGCCGCGTTG CTGGCGTTTT
 TCCGGTCGTT TTCCGGTCCT TGGCATTTTT CCGGCGCAAC GACCGCAAAA

2551 TCCATAGGCT CCGCCCCCCT GACGAGCATC AAAAAATCG ACGCTCAAGT
 AGGTATCCGA GCGGGGGGGA CTGCTCGTAG TGTTTTTAGC TGCGAGTTCA

2601 CAGAGGTGGC GAAACCCGAC AGGACTATAA AGATACCAGG CGTTTCCCCC
 GTCTCCACCG CTTTGGGCTG TCCTGATATT TCTATGGTCC GCAAAGGGGG

2651 TGGAAGCTCC CTCGTGCGCT CTCCTGTTCC GACCCTGCCG CTTACCGGAT
 ACCTTCGAGG GAGCACGCGA GAGGACAAGG CTGGGACGGC GAATGGCCTA

2701 ACCTGTCCGC CTTTCTCCCT TCGGGAAGCG TGGCGCTTTC TCATAGCTCA
 TGGACAGGCG GAAAGAGGGA AGCCCTTCGC ACCGCGAAAG AGTATCGAGT

2751 CGCTGTAGGT ATCTCAGTTC GGTGTAGGTC GTTCGCTCCA AGCTGGGCTG
 GCGACATCCA TAGAGTCAAG CCACATCCAG CAAGCGAGGT TCGACCCGAC

ApaLI

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T.O.S.T. "46600T"

|      |                           |                           |                          |                           |                          |
|------|---------------------------|---------------------------|--------------------------|---------------------------|--------------------------|
| 2801 | TGTGCACGAA<br>ACACGTGCTT  | CCCCCGGTTT<br>GGGGGGCAAG  | AGTCCGACCG<br>TCAGGCTGGC | CTGCGCCTTA<br>GACGCGGAAT  | TCCGGTAAC<br>AGGCCATTGA  |
| 2851 | ATCGTCTTGA<br>TAGCAGAACT  | GTCCAACCCG<br>CAGGTTGGGC  | GTAAGACACG<br>CATTCTGTGC | ACTTATCGCC<br>TGAATAGCGG  | ACTGGCAGCA<br>TGACCGTCGT |
| 2901 | GCCACTGGTA<br>CGGTGACCAT  | ACAGGATTAG<br>TGTCTAATC   | CAGAGCGAGG<br>GTCTCGCTCC | TATGTAGGCG<br>ATACATCCGC  | GTGCTACAGA<br>CACGATGTCT |
| 2951 | GTTCTTGAAG<br>CAAGAACTTC  | TGGTGGCCTA<br>ACCACCGGAT  | ACTACGGCTA<br>TGATGCCGAT | CACTAGAAGA<br>GTGATCTTCT  | ACAGTATTTG<br>TGTCATAAAC |
| 3001 | GTATCTGCGC<br>CATAGACGCG  | TCTGCTGTAG<br>AGACGACATC  | CCAGTTACCT<br>GGTCAATGGA | TCGGAAAAAG<br>AGCCTTTTTC  | AGTTGGTAGC<br>TCAACCATCG |
| 3051 | TCTTGATCCG<br>AGAACTAGGC  | GCAAACAAAC<br>CGTTTGTTTG  | CACCGCTGGT<br>GTGGCGACCA | AGCGGTGGTT<br>TCGCCACCAA  | TTTTTGTTTG<br>AAAAACAAAC |
| 3101 | CAAGCAGCAG<br>GTTCTGTCGTC | ATTACGCGCA<br>TAATGCGCGT  | GAAAAAAAGG<br>CTTTTTTTCC | ATCTCAAGAA<br>TAGAGTTCTT  | GATCCTTTGA<br>CTAGGAAACT |
| 3151 | TCTTTTCTAC<br>AGAAAAGATG  | GGGGTCTGAC<br>CCCCAGACTG  | GCTCAGTGGA<br>CGAGTCACCT | ACGAAAACCTC<br>TGCTTTTGAG | ACGTTAAGGG<br>TGCAATTCCC |
| 3201 | ATTTTGGTCA<br>TAAAACCAGT  | GATCTAGCAC<br>CTAGATCGTG  | CAGGCGTTTA<br>GTCCGCAAAT | AGGGCACCAA<br>TCCCGTGGTT  | TAACTGCCTT<br>ATTGACGGAA |
| 3251 | AAAAAAATTA<br>TTTTTTTAAT  | CGCCCCGCCC<br>GCGGGGCGGG  | TGCCACTCAT<br>ACGGTGAGTA | CGCAGTACTG<br>GCGTCATGAC  | TTGTAATTCA<br>AACATTAAGT |
| 3301 | TTAAGCATTC<br>AATTCGTAAG  | TGCCGACATG<br>ACGGCTGTAC  | GAAGCCATCA<br>CTTCGGTAGT | CAAACGGCAT<br>GTTTGCCGTA  | GATGAACCTG<br>CTACTTGAC  |
| 3351 | AATCGCCAGC<br>TTAGCGGTCTG | GGCATCAGCA<br>CCGTAGTCGT  | CCTTGTCGCC<br>GGAACAGCGG | TTGCGTATAA<br>AACGCATATT  | TATTTGCCCA<br>ATAAACGGGT |
| 3401 | TAGTGAAAAC<br>ATCACTTTTG  | GGGGGCGAAG<br>CCCCCGCTTC  | AAGTTGTCCA<br>TTCAACAGGT | TATTGGCTAC<br>ATAACCGATG  | GTTTAAATCA<br>CAAATTTAGT |
| 3451 | AAACTGGTGA<br>TTTGACCACT  | AACTCACCCA<br>TTGAGTGGGT  | GGGATTGGCT<br>CCCTAACCGA | GAGACGAAAA<br>CTCTGCTTTT  | ACATATTCTC<br>TGTATAAGAG |
| 3501 | AATAAACCCCT<br>TTATTTGGGA | TTAGGGAAAT<br>AATCCCTTTA  | AGGCCAGGTT<br>TCCGGTCCAA | TTCACCGTAA<br>AAGTGGCATT  | CACGCCACAT<br>GTGCGGTGTA |
| 3551 | CTTGCGAATA<br>GAACGCTTAT  | TATGTGTAGA<br>ATACACATCT  | AACTGCCGGA<br>TTGACGGCCT | AATCGTCGTG<br>TTAGCAGCAC  | GTATTCACTC<br>CATAAGTGAG |
| +1   |                           |                           |                          |                           |                          |
| 3601 | CAGAGCGATG<br>GTCTCGCTAC  | AAAACGTTTC<br>TTTTGCAAAG  | AGTTTGCTCA<br>TCAAACGAGT | TGGAAAACGG<br>ACCTTTTGCC  | TGTAACAAGG<br>ACATTGTTCC |
| 3651 | GTGAACACTA<br>CACTTGTTGAT | TCCCATATCA<br>AGGGTATAGT  | CCAGCTCACC<br>GGTCGAGTGG | GTCTTTCATT<br>CAGAAAGTAA  | GCCATACGGA<br>CGGTATGCCT |
| 3701 | ACTCCGGGTG<br>TGAGGCCAC   | AGCATTTCATC<br>TCGTAAGTAG | AGGCGGGCAA<br>TCCGCCCGTT | GAATGTGAAT<br>CTTACACTTA  | AAAGGCCGGA<br>TTTCCGGCCT |

3751 TAAAACTTGT GCTTATTTTT CTTTACGGTC TTTAAAAAGG CCGTAATATC  
 ATTTTGAACA CGAATAAAAA GAAATGCCAG AAATTTTTCC GGCATTATAG  
  
 3801 CAGCTGAACG GTCTGGTTAT AGGTACATTG AGCAACTGAC TGAAATGCCT  
 GTCGACTTGC CAGACCAATA TCCATGTAAC TCGTTGACTG ACTTTACGGA  
  
 3851 CAAAATGTTC TTTACGATGC CATTGGGATA TATCAACGGT GGTATATCCA  
 GTTTTACAAG AAATGCTACG GTAACCCTAT ATAGTTGCCA CCATATAGGT  
  
 3901 GTGATTTTTT TCTCCATTTT AGCTTCCTTA GCTCCTGAAA ATCTCGATAA  
 CACTAAAAAA AGAGGTAAAA TCGAAGGAAT CGAGGACTTT TAGAGCTATT  
  
 3951 CTCAAAAAAT ACGCCCGGTA GTGATCTTAT TTCATTATGG TGAAAGTTGG  
 GAGTTTTTTA TGCGGGCCAT CACTAGAATA AAGTAATACC ACTTTCAACC  
  
 4001 AACCTCACCC GACGTCTAAT GTGAGTTAGC TCACTCATTA GGCACCCCAG  
 TTGGAGTGGG CTGCAGATTA CACTCAATCG AGTGAGTAAT CCGTGGGGTC  
  
 4051 GCTTTACACT TTATGCTTCC GGCTCGTATG TTGTGTGGAA TTGTGAGCGG  
 CGAAATGTGA AATACGAAGG CCGAGCATAC AACACACCTT AACACTCGCC

M13 Reverse primer 100.0%

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4101 ATAACAATTT CACACAGGAA ACAGCTATGA CCATGATTAC GAATT  
 TATTGTTAAA GTGTGTCCTT TGTCGATACT GGTACTAATG CTAA

## Figure 15

MS-GPC-1 :

VH

QVQLKESGPALVKPTQTLTLTCTFSGFSLSTSGVGVGWIRQPPGKALEWLALID  
WDDDKYYSTSLKTRLTISKDTSKNQVVLMTNMDPVDATATYYCARQYGHRGGFD  
HWGQGTLLTVSS

VL

DIVLTQPPSVSGAPGQRVTISCSGSSSNIGSNYVSWYQQLPGTAPKLLIYDNNQ  
RPSGVPDRFSGSKSGTSASLAITGLQSEDEADYYCQSYDFNESVFGGGTKLTVL  
G

MS-GPC-6

VH

EVQLVESGGGLVQPGGSLRLSCAASGFTFSSYAMSWVRQAPGKGLEWVSAISGS  
GGSTYYADSVKGRFTISRDNKNTLYLQMNSLRAEDTAVYYCARGYGRYSPDLW  
GQGTLLTVSS

VL

DIVLTQSPATLSLSPGERATLSCRASQSVSSSYLAWYQQKPGQAPRLLIYGASS  
RATGVPARFSGSGSGTDFTLTISSLEPEDFAVYYCQQYSNLPFTFGQGTKVEIK  
RT

MS-GPC-8

VH

QVQLKESGPALVKPTQTLTLTCTFSGFSLSTSGVGVGWIRQPPGKALEWLALID  
WDDDKYYSTSLKTRLTISKDTSKNQVVLMTNMDPVDATATYYCARSPRYRGAFL  
YWGQGTLLTVSS

VL

DIVLTQPPSVSGAPGQRVTISCSGSSSNIGSNYVSWYQQLPGTAPKLLIYDNNQ  
RPSGVPDRFSGSKSGTSASLAITGLQSEDEADYYCQSYDMPQAVFGGGTKLTVL  
G

MS-GPC-10

VH

QVQLKESGPALVKPTQTLTLTCTFSGFSLSTSGVGVGWIRQPPGKALEWLALID  
WDDDKYYSTSLKTRLTISKDTSKNQVVLMTNMDPVDATATYYCARQLHYRGGFD  
LWGQGTLLTVSS

VL

DIVLTQPPSVSGAPGQRVTISCSGSSSNIGSNYVSWYQQLPGTAPKLLIYDNNQ  
RPSGVPDRFSGSKSGTSASLAITGLQSEDEADYYCQSYDLTMGVFGGGTKLTVL  
G

| Parameter                                       | Value                                                  | Unit                         |
|-------------------------------------------------|--------------------------------------------------------|------------------------------|
| Initial concentration of $\text{H}_2\text{O}_2$ | 0.01                                                   | M                            |
| Initial concentration of $\text{Fe}^{2+}$       | 0.001                                                  | M                            |
| Initial concentration of $\text{H}^+$           | 0.1                                                    | M                            |
| Temperature                                     | 25                                                     | $^{\circ}\text{C}$           |
| Reaction time                                   | 0-100                                                  | min                          |
| Reaction rate                                   | 0.001                                                  | $\text{M}^{-1}\text{s}^{-1}$ |
| Reaction order                                  | 1                                                      |                              |
| Activation energy                               | 10.5                                                   | $\text{kJ mol}^{-1}$         |
| Pre-exponential factor                          | 1.0                                                    | $\text{M}^{-1}\text{s}^{-1}$ |
| Reaction mechanism                              | Free radical chain reaction                            |                              |
| Reaction products                               | $\text{Fe}^{3+}$ , $\text{H}_2\text{O}$ , $\text{O}_2$ |                              |
| Reaction conditions                             | Dark, sealed, stirred                                  |                              |
| Reaction medium                                 | Aqueous solution                                       |                              |
| Reaction vessel                                 | 100 mL glass bottle                                    |                              |
| Reaction setup                                  | Stirrer, thermometer, gas outlet                       |                              |
| Reaction safety                                 | Use gloves, avoid contact with skin                    |                              |
| Reaction disposal                               | Neutralize with NaOH, then dispose                     |                              |
| Reaction notes                                  | Reaction is exothermic, monitor temperature            |                              |
| Reaction references                             | See literature for further details                     |                              |

VL

VH

VL

VH

VL

VH

VL

VH

QVQLKESGPALVKPTQTLTLTCTFSGFSLSTSGVGVGWIRQPPGKALEWLALID  
WDDDKYYSTSLKTRLTISKDTSKNQVVLMTNMDPVDATATYYCARSPRYRGAFD  
YWGQGT LVT VSS

VL

DIVLTQPPSVSGAPGQRVTISCSGSESNIGANYVTWYQQLPGTAPKLLIYDNNQ  
RPSGVPDRFSGSKSGTSASLAITGLQSEDEADYYCQSYDYDHYVFGGGTKLTVL  
G

MS-GPC-8-10-57

VH

QVQLKESGPALVKPTQTLTLTCTFSGFSLSTSGVGVGWIRQPPGKALEWLALID  
WDDDKYYSTSLKTRLTISKDTSKNQVVLMTNMDPVDATATYYCARSPRYRGAFD  
YWGQGT LVT VSS

VL

DIVLTQPPSVSGAPGQRVTISCSGSESNIGNNYVQWYQQLPGTAPKLLIYDNNQ  
RPSGVPDRFSGSKSGTSASLAITGLQSEDEADYYCQSYDLIRHVFSGGGTKLTVL  
G

MS-GPC-8-27-41

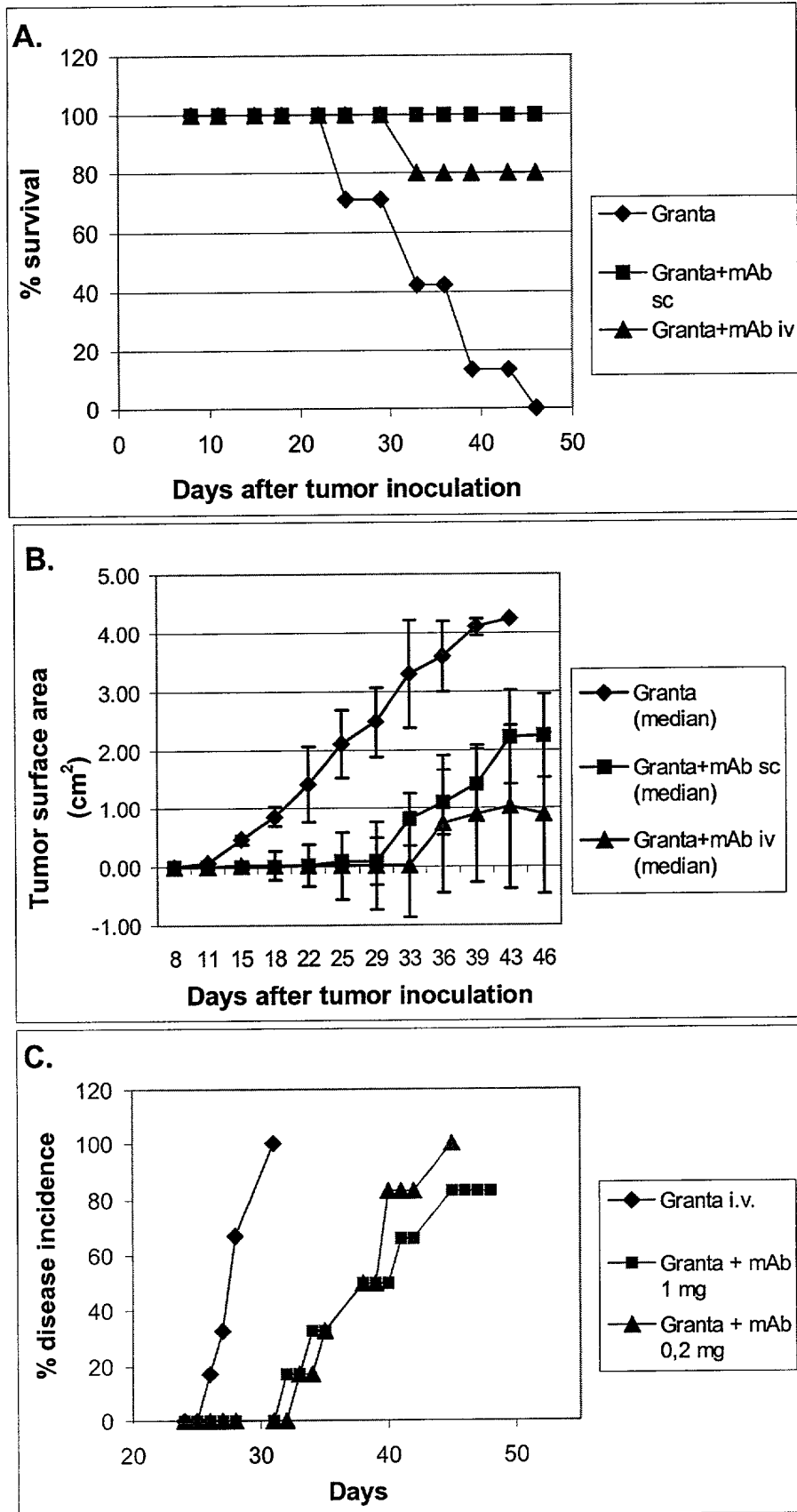
VH

QVQLKESGPALVKPTQTLTLTCTFSGFSLSTSGVGVGWIRQPPGKALEWLALID  
WDDDKYYSTSLKTRLTISKDTSKNQVVLMTNMDPVDATATYYCARSPRYRGAFD  
YWGQGT LVT VSS

VL

DIVLTQPPSVSGAPGQRVTISCSGSESNIGNNYVQWYQQLPGTAPKLLIYDNNQ  
RPSGVPDRFSGSKSGTSASLAITGLQSEDEADYYCQSYDMNVHVFSGGGTKLTVL  
G

# Figure 16



## Figure 16 (Cont.)

**D**



**Mouse #2, untreated, day 32; tumor area 4.76 cm<sup>2</sup>**

**E**



**Mouse #13, mAb i.v., day 32; tumor area 0.01 cm<sup>2</sup>**